(No Model.)

E. OVER.
Water Filter.

No. 235,893. Patented Dec. 28, 1880.

Fig. 1

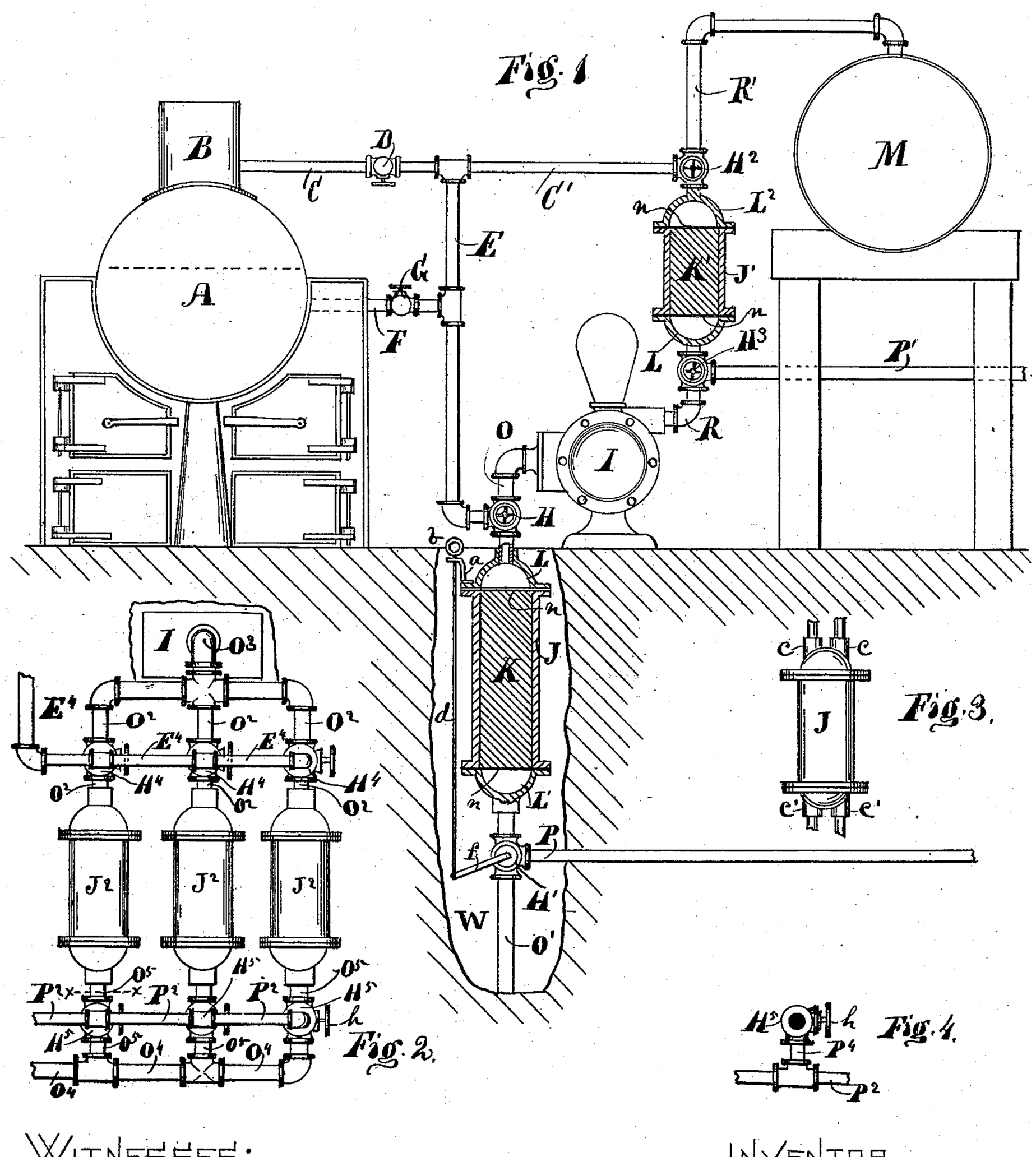

Fig. 2.

Fig. 3.

Fig. 4.

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EWALD OVER, OF INDIANAPOLIS, INDIANA.

WATER-FILTER.

SPECIFICATION forming part of Letters Patent No. 235,893, dated December 28, 1880.

Application filed July 10, 1880. (No model.)

To all whom it may concern:

Be it known that I, EWALD OVER, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new arrangement of devices for filtering water in the suction-pipe between a well or other source of water-supply and a pump, or in a discharge-pipe in which the water is under pressure, and for cleaning out the filtering-chambers by steam or hot water, of which the following is a specification.

My invention relates to improvements in devices for filtering water and for cleaning the filtering material from sediment, in which the water is filtered in a suction-pipe between the well or other source of water-supply and a pump, or in the discharge-pipe in which the water is under pressure; and the objects of my improvements are, first, to remove the sediment from the water before it is discharged; second, to afford facilities for the removal of the sediment from the filtering-chambers, either by the use of steam or hot water under pressure. These objects I attain by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a general view of the entire device, partially in section. Fig. 2 is a side elevation of a battery of filters and their connections with the well or other source of water-supply, also their connections with a suction-pump or discharge-pipe of water under pressure. Fig. 3 is a modified form of the filter, showing double ports above and below; and Fig. 4 is a cross-section taken at the line *x x* of Fig. 2.

A represents any ordinary steam-boiler, with steam-dome B. I represents a pump; W, the well or other source of water-supply; M, the heater or water-receptacle, and J J′ J² the filtering-chambers. These filtering-chambers may be of any ordinary form of filters, having an inlet at one end and a discharge at the other, and provided with filtering material K between suitable screens, *n n*.

The lower section, O′, of the suction-pipe, Fig. 1, is provided with a three-way cock, H′, the side branch of which is provided with the sediment-discharge pipe P, and the key of the cock, if the filter is located below the base of the pump, as in a well, may be provided with a lever, *f*, a rod, *d*, and a handle, *b*, for operating it. These, of course, are not necessary if the filter is above ground. Between the upper end of the filter J and the pump I the section O of the suction-pipe is also provided with a three-way cock, H, the side branch of which is provided with the pipe E, which may have one or two connections with the boiler—*i. e.*, one connection, C, with valve D, connecting with the steam-dome B, the other pipe, F, with valve G, which connects with the boiler A below the water-line, thus providing a means for the use of steam or hot water for cleaning out the sediment which collects in the lower part of the filtering material in the chamber J. This sediment, as it is collected in the filtering material K by the passage of the water upward through said material, is very easily and thoroughly removed by the steam or hot water from the boiler, which passes through the filtering material in an opposite direction from that which deposited the sediment, and which steam or hot water can be used under a greater pressure than the water which deposited the sediment in the filtering material. The discharge-pipe R of the pump I may, in this case, lead directly from the pump to the heater or other receptacle or distributer M, and the water is filtered before passing through the pump for discharge; but in case another filtering-chamber, J′, is used in the discharge-pipe in which the water is under pressure, then the section R of said discharge-pipe is provided with a three-way cock, H³, just below the filter J′, the side branch of which is provided with the sediment-discharge pipe P′, and between the top of the filter J′ and water receptacle or distributer M is another three-way cock, H², the side branch of which is connected with the pipe C by means of the pipe C′; or the pipe C′ may be independent of the pipe C and connect direct with the boiler A and steam-dome B, in the same manner as the pipe E.

It is obvious that the three-way cocks may be dispensed with in case the filtering-chambers J, Fig. 3, are provided with two ports, *c c*, above and two ports, *c′ c′*, below. In this case the steam or hot-water pipes C, F, and E would connect with one of the ports *c* above, while the section O of the suction-pipe

would connect with the other port *c*, also above, and the discharge-pipe P below, as well as the section O′ of the suction-pipe, would connect with their respective ports *c′ c′* below; also, that the filters J and J′ may be used singly or combined, if desired.

There may be several of the filters united, forming a battery, as shown in Fig. 2, in which case the lower section, O^4, of the suction-pipe connects with the branch pipe O^5, and these branch pipes O^5 connect with their respective three-way cocks H^5 and filters J^2. The sediment-discharge pipe P^2 is also connected to the side ways of each cock H^5 by branch pipes P^4, as shown in Fig. 4. The upper section, O^3, of the suction-pipe is also connected to each filter J^2 by branches O^2, which are provided with three-way cocks H^4 between the filters and pump I. The steam or hot-water pipe E^4 is also connected to the side ways of each cock H^4 by branch pipe, in the same manner as the sediment-discharge pipe is connected to its respective three-way cocks below. Thus each filter is independent of the other, and all may be used at once, or any one or more of them, and each filter may be cleaned independent of the other, or all at once, as will be hereinafter described.

The operation of my improvement is as follows, to wit: The pump I being in operation, the water is drawn up through the pipe O′ into and through the filter J, into the pump I, and discharged direct through the pipe R into the water receptacle or distributer M, (if the filter J′ is not used;) but in case the filter J′ is used with the filter J, then the water, after passing through the pump, is again filtered in its passage through the filter J′ before reaching the water receptacle or distributer M; and if the filter J′ is used without the filter J, then the water is filtered after leaving the pump.

In case the supply of water to be filtered is under pressure the use of the pump may be dispensed with and the filters operated as shown in the description of the filter J′.

When any of the filters J J′ J^2 become foul by the accumulation of deposit in the filtering material K, then by turning the keys of the cocks H and H′ so that there is an opening to the pipe E and sediment-discharge pipe P, while the suction-pipe is closed above and below the filter J, and applying steam through the pipe C and cock D, or hot water through the pipe F and valve G, the sediment will be forced downward out of the filtering material K by the force of the steam or water, which may be greater than that of the water which deposited the sediment, and discharged through the pipe P until the filter is clean, after which the cock D or G, whichever is used, is closed, and the three-way cocks H H′ again adjusted to permit the water from the well or other source of water-supply to pass through them.

By means of this filtering arrangement I am enabled to remove a very large quantity of mud, lime, or other sediment contained in the water before the water reaches the water-distributer M.

What I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a steam-pump, the filtering-chamber J, provided with a three-way cock, H′, or its equivalent, and the sediment-discharge pipe P below, and also provided with the three-way cock H, or its equivalent, and the pipe E, forming a connection with the boiler A above, as and for the purpose specified.

2. In a device for filtering water under pressure and for cleaning the filtering material from its sediment, the filter J, with water-inlet and sediment-discharge pipes at its lower end, provided with a three-way cock, H′, or its equivalent, and a water-outlet with a pipe for steam or hot water at its upper end, provided with a three-way cock, H, or its equivalent, substantially as shown and described.

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

EWALD OVER.

Witnesses:
E. O. FRINK,
GEORGE H. RENNETT.