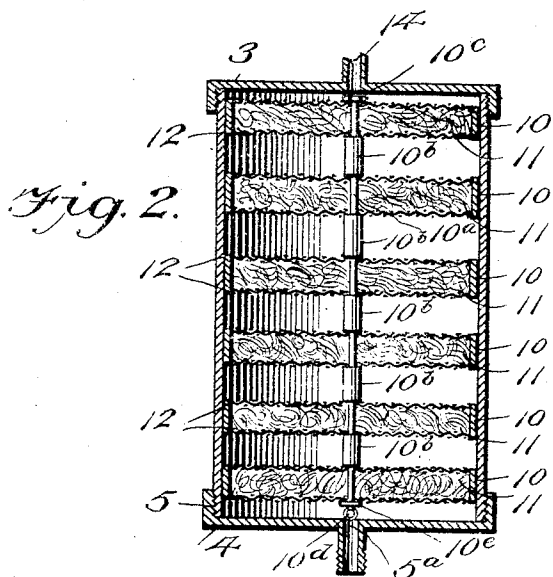
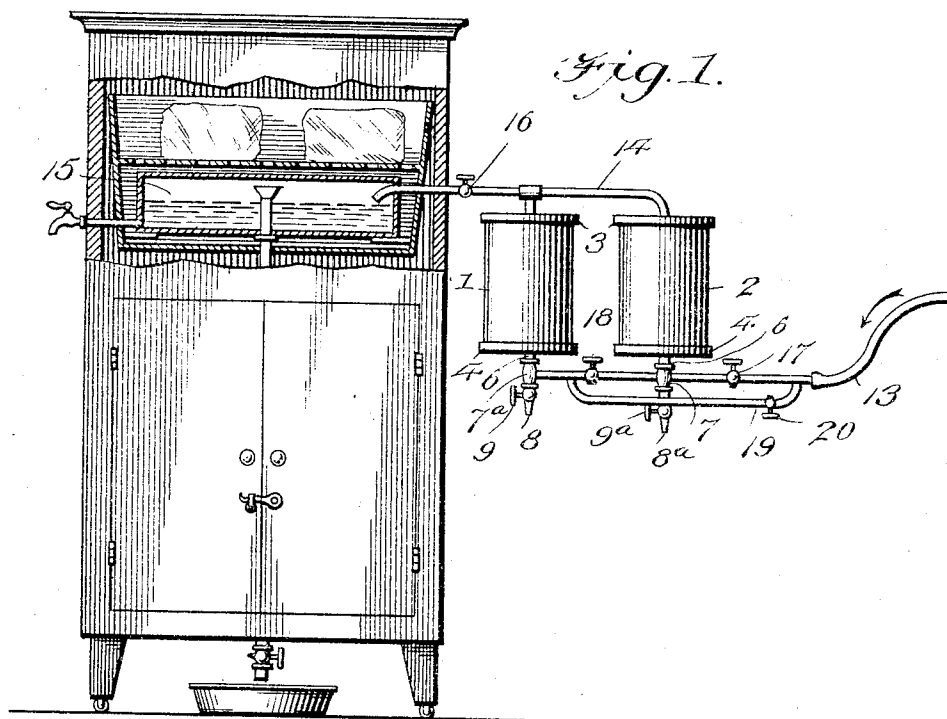


M. B. LUKENS.
 FILTERING APPARATUS.
 APPLICATION FILED APR. 27, 1904.



Witnesses

*Geo. Ackerman &
 C. H. Hymn*

Inventor

M. B. Lukens,

By

Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

MERRIKEN B. LUKENS, OF ATLANTA, GEORGIA.

FILTERING APPARATUS.

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To all whom it may concern:

Be it known that I, MERRIKEN B. LUKENS, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented new and useful Improvements in Filtering Apparatus, of which the following is a specification.

My invention has relation to new and useful improvements in filtering apparatus, and particularly to apparatus of that type which are constructed to be interposed in the service-pipe for the purpose of purifying the water as it enters a house.

One of the objects of the invention is to provide a plurality of filtering mediums or receptacles which are so arranged and combined that any one of said receptacles may be cut out of use when it is desired to repair or cleanse the same without placing the remaining receptacles out of operation.

A further object is to provide a simple and effective means for reversing the flow of water through the receptacles for the purpose of cleansing the same.

The invention consists in the novel arrangement and aggroupment of the various elements in operative combination, the novelty of which will be fully described hereinafter and particularly pointed out and distinctly claimed.

I have fully and clearly illustrated my invention in the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a view in front elevation of the complete apparatus, showing the same in position for operation. Fig. 2 is a vertical central section through one of the filtering-chambers, showing the arrangement of the filtering medium therein.

Referring to the drawings, 1 2 designate filtering-chambers, each of which consists of a cylindrical shell of suitable size and material, the upper and lower ends of which are closed by means of heads 3 4, provided with interiorly-threaded annular flanges 5, which stand at right angles to the heads and are adapted to engage threads on the shells of the chambers in order to secure the said heads in position. At their centers the lower heads, which constitute the bottoms of the chambers, are formed with openings 5^a, communicating with depend-

ing necks 6, upon which are threaded pipe couplings or unions 7 7^a, from the lower end of which extend draw-off spigots 8 8^a, provided with suitable valves 9 9^a, by means of which the flow of water through said spigots 8 8^a from the filtering-chambers is controlled.

The filtering medium contained in the chambers 1 and 2, through which the water flows, may be of any suitable material or substance which will remove impurities from the water; but I have shown said medium as consisting of a plurality of disks or layers each of which consists of a surrounding frame 10, which conforms to the interior form of the shells and is adapted to fit snugly therein. Within these frames 10 are arranged layers of cotton 11 or other suitable material, which is held in place by means of sheets of wire-gauze or perforate metal 12, secured upon the upper and lower edges of the surrounding frame 10. These layers or disks are arranged one above the other, as shown in Fig. 2 of the drawings, and projected centrally therethrough is a rod 10^a, upon which between the filtering-disks are spacing blocks or washers 10^b, by means of which the said disks are disposed in spaced relation. This rod 10^a is of sufficient length to project a short distance above the upper disk, where it is threaded to receive a nut 10^c, by means of which the several disks are bound together, while the lower end of the rod is provided with an eye 10^d, constituting a hand-grasp, by which the entire set of disks may be withdrawn from the chamber after the lower head 4 has been removed, a washer 10^e being arranged between the eye and the lower disk, against which the lower disk is clamped by the nut 10^c.

13 designates a service-pipe communicating with the main or other source of supply and connected to the unions 7 7^a of the filtering-chambers at a point above the valves 9 9^a, so that water flowing through said pipe 13 will enter the filtering-chambers and percolate upwardly through the filtering-disks, the water flowing out of the chambers through an outlet-pipe 14, having communication with the chambers through the upper heads thereof. For the purpose of illustrating the utility of the invention I have shown this outlet-pipe as

emptying into the water-tank 15 of a refrigerator. The flow of filtered or purified water from the chambers is regulated or shut off by means of a turn-plug 16, located in the pipe 14 at a point adjacent the outlet end thereof.

In the service-pipe 13 at a point in advance of the union 7 is a turn-plug 17, by means of which the flow of water to the filtering-chambers is regulated. A second valve, 18, is also located in the pipe 13 and is situated between the two chambers 1 and 2. It will be seen that the water may be directed through the chamber 2 alone and cut off from the chamber 1 by closing the valve 18.

19 designates a branch or shunt pipe, one end of which is connected to the service-pipe 13 at a point in advance of the valve 17 and the other end of which communicates with the pipe 13 between the valve 18 and the filtering-chamber 1, and within this pipe 19 is positioned at any suitable point a valve 20. By this pipe, the valve 20 therein, and the valves 17 and 18 in the pipe 13 is provided a means for reversing the flow of water through one or the other of the chambers for the purpose of cleansing the same and also for cutting out the filter 2 when it is desired to employ only the filter 1.

When the filter is in use and the water is permitted to flow through both shells or chambers 1 and 2, the valves 9^a in the spigots 8 8^a and the valve 20 in the pipe 19 are closed and the valves in the service-pipe and the outlet-pipe 14 are opened, so that the water flows through the service-pipe upwardly through the unions 7 7^a and necks 6 and courses through the filtering-chambers and thence out through the outlet-pipe 14. As above stated, the flow of water through the chamber 1 may be cut off and directed through the chamber 2 by closing the valve 18. When it is desired to direct the water through the chamber 1, the object may be accomplished by closing the valves 17 and 18 in the service-pipe and opening the valve 20 in the shunt or branch pipe 19, when the water will flow through the branch pipe into the pipe 13 on the far side of the valve 18 and thence through the filter.

The method of cleansing the filter-chambers by means of the flow of the water will now be described.

In order to clean filter-chamber 1, the valves 16 in the outlet-pipe, 18 in the pipe 13, 20 in the branch pipe, and 9^a in the spigot for chamber 2 are closed and the valves 9 and 17 opened, when the water will flow upwardly through the chamber 2, out through the pipe 14, thence

downwardly through the chamber 1, and out through the spigot 8. This reversal of the flow of water through the chamber serves to wash out through the spigot 8 all the dirt and other impurities which have lodged in the filtering medium in the chambers. To clean the chamber 2, valves 16 in the outlet-pipe, 9 in the spigot of chamber 1, and 17 and 18 in the service-pipe 13 are closed, the valves 20 in the branch pipe 19 and the valve 9^a being open, which will cause the water to flow from the service-pipe into the branch pipe upwardly through chamber 1, thence over through the pipe 14, downwardly through the chamber 2, and out through the spigot. It will be seen that this reversal of the flow of water through the filtering medium affords an efficient means for cleansing the same of residue which becomes collected in purifying the water, and it will also be perceived that each chamber is cleaned with filtered water, inasmuch as it is first passed through the filtering medium before being utilized for cleaning purposes, so that no dirt accumulates upon the upper surface of the filtering medium being cleaned.

Having thus fully described the invention, what is claimed as new is—

1. A filtering apparatus comprising a pair of chambers provided at the bottoms thereof with valved draw-off devices, a service-pipe connecting said devices, formed with a valve located in advance of the first chamber, and with another valve located intermediate of the two chambers, a branch pipe having one end connected to the service-pipe in advance of the first-mentioned valve in the latter, and its other end connected to said service-pipe intermediate of the second-mentioned valve therein and the second chamber, said branch pipe also having a valve, and a pipe connecting the chambers at the tops thereof, provided with a valve located beyond the second chamber.

2. A filter-chamber comprising a plurality of filtering-disks each constructed of a frame having upper and lower reticulated heads and an interposed filtering medium, a rod extending through the heads and provided with spacing-sleeves between the heads, and a nut on the rod located between the uppermost head and the top of the chamber.

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

MERRIKEN B. LUKENS.

Witnesses:

C. L. PETTIGREED,
JOSEPH W. HUMPHRIES.