V. B. HAGG.
WATER PURIFIER.
APPLICATION FILED JULY 18, 1912.

1,052,440. Patented Feb. 4, 1913.

Fig. 1.

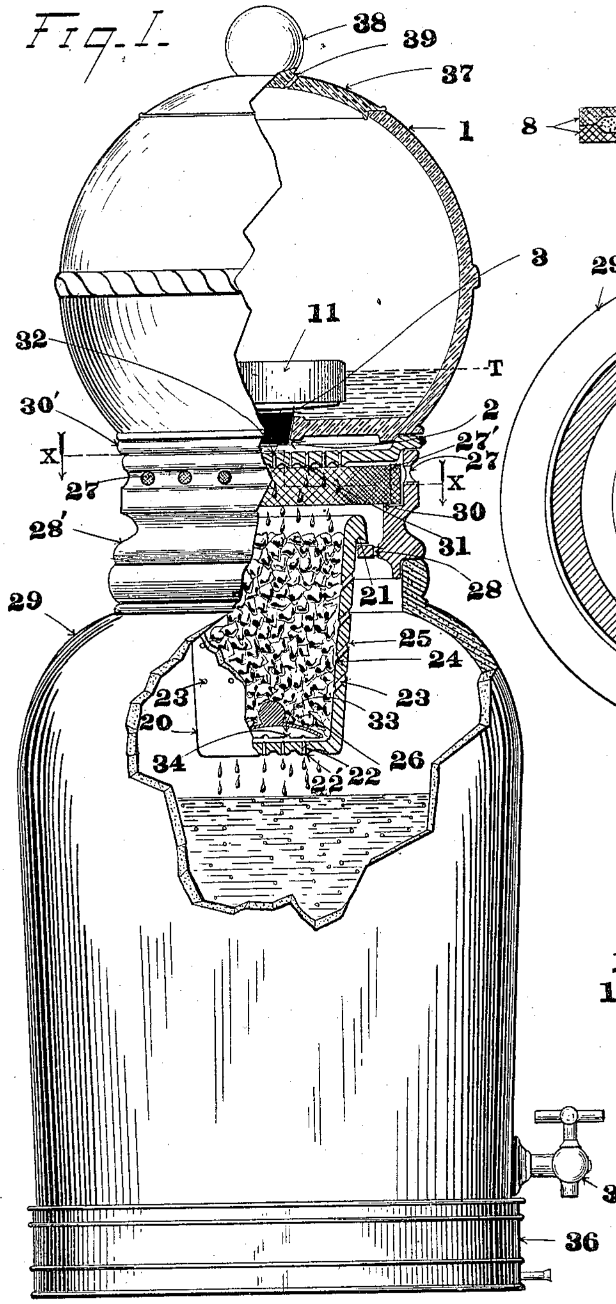


Fig. 4.

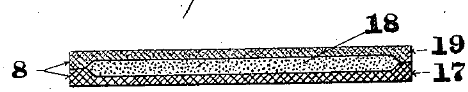


Fig. 2.

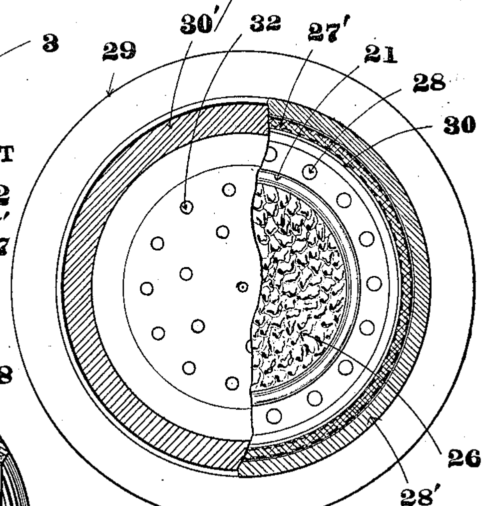
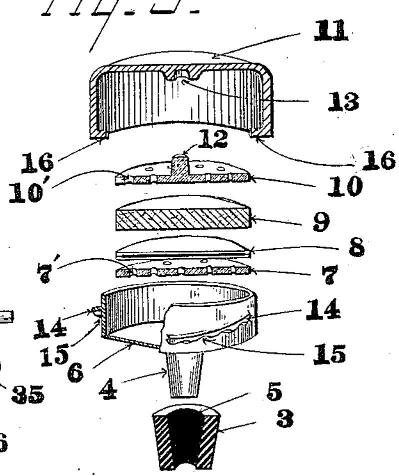


Fig. 3.



WITNESSES:

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VIRGIL B. HAGG, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO CONTINENTAL WATER PURIFYING CORPORATION, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

WATER-PURIFIER.

1,052,440. Specification of Letters Patent. Patented Feb. 4, 1913.

Application filed July 18, 1912. Serial No. 710,267.

To all whom it may concern:

Be it known that I, Virgil B. Hagg, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Water-Purifier, of which the following is a specification.

This invention relates more particularly to filters that depend upon specially constructed parts and filtering material for its operation and has for its main object a novel and simple arrangement of parts hereinafter set forth in which the water is initially subjected to adjustable percolation of greater purifying efficiency than heretofore accomplished, without the aid of threaded bolts, screws or swiveled clamps, so that the parts can be dismantled in a few seconds time by unskilled persons for the purpose of cleaning or renewal of the media or broken parts as required.

Another object is to provide a simple means of thoroughly disseminating atmospheric oxygen to all parts of the filtering media or carbon, thereby prolonging and increasing the oxidizing efficiency of the carbon.

A further object is to release vitiated air from the filtered water reservoir thereby accelerating the process of cooling and providing sanitary storage for the filtrate.

Other objects will be in part obvious and in part pointed out hereinafter.

In the accompanying drawings wherein is shown a possible physical embodiment of my invention, in which—

Figure 1 is a perspective view of my invention, a part thereof broken away disclosing a view partly in perspective and partly in vertical mid-section of the parts and principal mode of assembling same. Fig. 2 is a horizontal view on line X—X of Fig. 1. Fig. 3 are views of the various parts of the removable percolating or filtering stopper in order of the assembling, shown partly in perspective and partly vertical mid-section. Fig. 4 is an enlarged view of the disk 8 of Fig. 3, showing the form of construction.

As indicated in the drawings: I provide a receiving receptacle 1, having an opening 2 centrally located in the bottom having a downward gradual diminution of its diameter to permit a water-tight fit for the removable stopper 3. The stopper 3 is preferably made of elastic material impermeable to water. Referring to Fig. 3, the funnel spout 4 passes through the annular passage 5 in the stopper 3.

The lowest water level in the receiving reservoir 1 is indicated by the dotted line T in Fig. 1, so that the rubber stopper 3 is always submerged, water being considered an excellent preservative of rubber. The bottom 6 of the funnel slopes downward from its periphery toward the central spout 4 to permit water to escape through the perforations 7′ when the porcelain disk 7 is in position on the bottom 6. The straining pad 9 supports a similar perforated disk 10. The percolating disk 8 rests upon the perforated disk 7. The hood 11 fits over the entire series of disks 7, 8, 9, 10 and over body portion of funnel 6, the hood 11 equalizing the pressure by central contact with the protuberant knob 12 of the pressure disk 10, said knob fitting within the recess 13. The outer periphery of the wall of the funnel 6 is provided with two semi-circular helical flanges 14 diametrically opposite each other. The under side of the flanges 14 are serrated as shown at 15. The hood 11 is provided with two horizontal lugs or projections 16 at the base of the inner wall being diametrically opposite each other and fit respectively in the serrations 15 when the hood 11 is in position. It is obvious that enough space must intervene at the four terminals of the helical flanges 14 to allow the passage of the projections 16 in order to place the hood 11 in position. When the hood 11 is turned in the direction of the downward wind of the helical flanges 14, pressure is brought to bear upon the protuberant knob 12, thus compressing the filtering disks 8 and 9, the resistance and elasticity of the media 8 and 9 causes the lugs 16 to press into the serrated parts 15 thus providing a simple means of locking the hood 11 in any desired position for the purpose of adjusting and controlling the flow of water. The advantage derived from this improvement is that it prevents the water from swelling the channels of the media and allowing impurities to pass and that less material may be used with an increase of efficiency.

I find it advantageous to construct a special percolating disk 8, illustrated diagrammatically in Fig. 4. In constructing this disk I use an upper binder 19 and a lower binder 17 the chief constituent being a hydrous silicate of magnesia as found in an asbestiform fiber. The intermediate layer 18 of the disk 8 consists of wood-carbon previously treated to a dilute solution of sulfate of alumina in excess of an acid phosphate solution. The superincumbent portion 19 of the disk 8 is of a disintegrated character containing silicon dioxid (SiO_2) in a pure, finely divided state and a portion of wood-carbon, treated as previously stated for the intermediate layer 18.

By the thorough aeration of the carbon chamber 20 by means of the air-channels 23, oxidation of iron is accelerated as well as imparting a recuperatory effect upon the carbon.

The top of the carbon chamber 20 is provided with an outwardly extending flange 21 as a means of support, the bottom of chamber 20 is provided with egress channels 22 which terminate into projecting drip-points 22′. The combined capacity of the exit orifices 22 is in excess of the delivery capacity of the filtering stopper Fig. 3, so as to prevent the water from passing up the oblique air-channels 23. Interior opening 24 is lower than opening 25 on the exterior thus forming oblique channels for the purpose of causing the water to exit at orifices 22. These channels provide a simple and efficient means of supplying atmospheric oxygen constantly to the pores of the media 26. The means of supplying the purifier with filtered air is by the annular passage 27 and the germ-proof screens 27′ of antiseptic cotton, retained within the removably mounted chamber 28′ by the flange 30 and more particularly described in a prior application filed April 1, 1912, Serial No. 687,871.

The air passages 28 provide a simple means of releasing the vitiated air from the interior of the reservoir 29.

In operation the impure water is received in the reservoir 1, where a subsidiary process takes place as "settling" of the coarse suspended matter, which is greatly facilitated by retarding the velocity of the flow by means of the hood 11. The media 9 preferably silicated cotton removes feculent matter from water while it affords an effective protective medium for the percolating disk 8, arresting matters held in suspension that does not spontaneously settle, retaining the impurities by molecular adhesion to the filter channels. The water now being relieved of matters held in suspension passes through the disk 8 where the water is further acted upon. The water exits from the filtering stopper by means of the funnel spout 4, whence it falls into the distribution basin 30′ the bottom of which is formed into a plurality of semi-globular depending drip-points 31. Perforations 32 extend vertically through the bottom and these points, allowing the distribution of water over a large area of the carbon 26. In the carbon chamber 20 a further purifying process occurs relieving the water of deleterious gases, odors or putrescible matters in solution and the oxidation of iron which is greatly facilitated by the oblique air-channels 23 and the drip-points 22′ the latter providing for additional aeration.

The removable concave member 33 prevents the exit orifices 22 from becoming choked with the media 26. The periphery of the concave member 33 is serrated as indicated at 34 to allow water to escape to the exit orifices 22.

An outlet for the filtered water is indicated at 35. The reservoir 36 is for surplus water caused by percolation from the walls of the porous reservoir 29. The reservoir 1 is provided with a suitable cover 37 containing an air passage 39 and a knob 38 for convenient handling.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the comparatively simple construction should be readily understood, while I have described with great particularity of detail the principle of operation of the invention, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device is merely illustrative and hence I do not restrict myself to the precise details set forth, but consider myself at liberty to make such slight changes and alterations in the form and proportion of the parts without departing from the spirit and scope of the claim appended hereto.

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

In a water purifier, a combination of a media-chamber provided with a plurality of obliquely perforated air-channels in its wall, the bottom of said media-chamber formed into a plurality of depending drip-bosses said drip-bosses perforated with vertical channels, the said media-chamber supported within an open-bottomed chamber by an inwardly extending flange said flange being a part of the base of the inner wall of said open-bottomed chamber, the walls of said open-bottomed chamber containing a plurality of perforations, absorbent cotton covering interior openings of said perforations.

In testimony whereof, I have hereunto set my hand at Los Angeles, California this 26th day of June, 1912.

VIRGIL B. HAGG.

Witnesses:
B. I. BAUCHET,
C. B. HAGG.