Jan. 15, 1952 E. H. MANSFIELD 2,582,388

FILTER

Filed Dec. 29, 1948

Fig. 1.

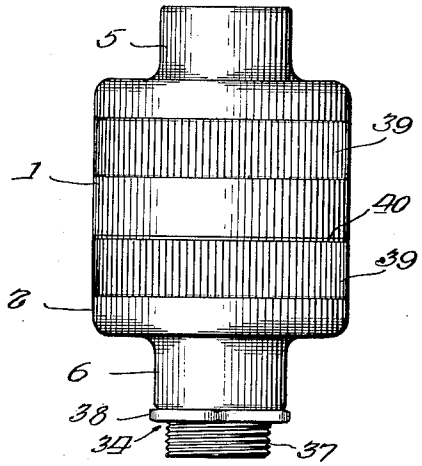


Fig. 2.

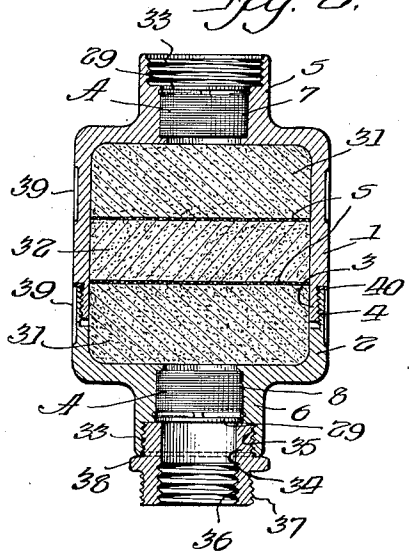
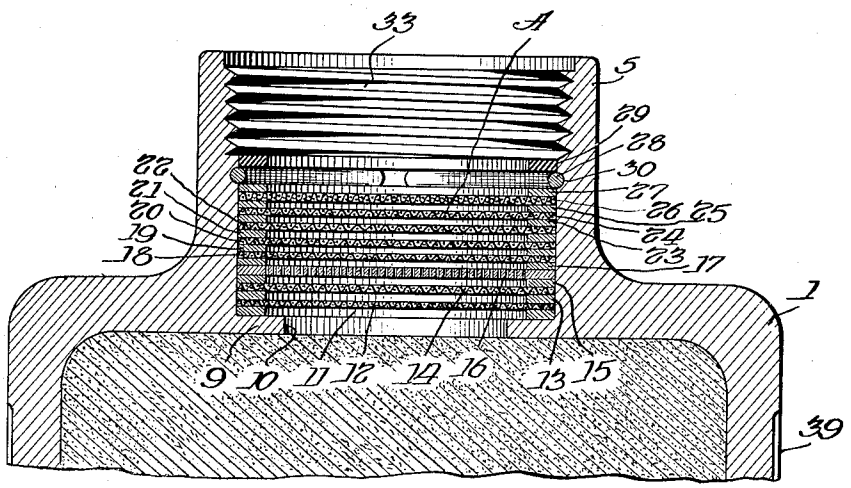


Fig. 3.



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Patented Jan. 15, 1952 2,582,388

UNITED STATES PATENT OFFICE

2,582,388

FILTER

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Application December 29, 1948, Serial No. 67,845

2 Claims. (Cl. 210—85)

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My invention relates to improvements in water filters designed especially for domestic, home or office uses to filter and clarify water for domestic uses from a suitable source.

The invention has among its objects the production of a simple, compact, inexpensive and particularly efficient device of the kind described which may be readily attached to a water faucet of its equivalent. It is designed to be self-cleaning by reversing the filter on the faucet to reverse the direction of the flow through the same, thereby flushing out impurities, as desired. It may be readily installed or applied without tools and, when desired, be removed from the faucet and reversed for reversing the flow of water through it to clean or flush the same, all without the need of tools.

While ordinarily it is not necessary to open the filter and recharge the same with new filtering or clarifying materials except at long intervals, the same may, however, be readily and conveniently opened and recharged after the removal of the old materials in a few moments time.

The device is attractive and an ornament when applied to a faucet, and when used prevents splashing of the water in a sink or wash bowl. It is found that by use of the device, cloudy or more or less muddy water after coming through the filter is clarified as well as more or less deodorized and comes out clear and sparkling like spring water. The length of the time interval when it should be flushed or the flow reversed or the contents renewed depends upon the condition of the water being filtered and its source.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosures given.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described and more particularly pointed out in the claims.

In the drawing wherein like reference characters indicate like or corresponding parts:

Fig. 1 is a view in elevation of my improved filter with an adapter in place;

Fig. 2 is a sectional view through the same; and

Fig. 3 is an enlarged sectional view through one end illustrating the screening elements, the opposite end being substantially the same.

Referring to the drawings, I provide a shell or housing consisting of the parts 1 and 2. One part, as shown 1, is externally threaded at 3 and the other part 2 internally threaded at 4 at their juncture. Part 1 is preferably provided with a

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reduced neck 5 and part 2 with a similar neck 6; neck 5 having a tubular bore 7, and neck 6 a similar bore 8. At the inner end of each bore is a shoulder 9 having an opening 10 communicating with the interior of the shell or housing.

It may be mentioned that the two parts 1 and 2 of the device are each provided with the similar screening units or elements designated generally by letter A, so that it is only necessary to describe those at one end since, for example, the elements in the member 1 are similar to those in the member 2 and arranged in the same preferred sequence.

Within the bore 7 (see Fig. 3) is arranged a fiber gasket 11 which rests on the shoulder 9. Arranged on the gasket 11 is a one hundred mesh screen 12 and above that an eighty mesh screen 14, the two being separated by a bone gasket 13. A bone gasket 15 is arranged over the screen 14 and carried by the gasket 15 is a substantially thick perforated plate 16 having approximately one hundred apertures to the square inch, the same being approximately size 00. Arranged on the plate is another bone gasket 17 which carries a sixty mesh screen 18 and above this is arranged another bone gasket 19. Arranged on gasket 19 is a forty mesh screen 20 which is separated by a gasket 21 from a sixty mesh screen 22. Arranged between the sixty mesh screen 22 and an eighty mesh screen 24 is another bone gasket 23. Arranged over screen 24 is a bone gasket 25 which carries a one hundred mesh screen 26 above which is also arranged a bone gasket 27.

The assembly just described is maintained in place in the part by means of a split ring washer 28 seated in a circumferential groove 30, and arranged on the split ring is a rubber gasket 29. Each of the shell segments at the necks 5 and 6 is provided with internal threads 33 arranged to threadedly engage with a faucet threaded about the discharge end or with an adapter carried by the faucet.

Arranged within the shell are layers of activated carbon 31—31 which are separated by a layer of silica 32. Generally it is preferred to separate the activated carbon and the silica by the screens S of the desired mesh. For the carbon I use a hard granulated activated carbon which is as hard as silica sand and will stand high pressure and considerable knocking about without crumbling or breaking down. I use a highly activated carbon that has been chemically treated to accomplish the removal of any undesirable taste or odor. Any activated carbon may be used which will accomplish this.

By employing a series of spaced screens arranged substantially as shown, the water is very efficiently screened; first, as it enters the filter, and again when it leaves after passing through the activated carbon and silica. I have found that by varying the screens and using spaced screens of different mesh, the mud, sand, sludge and contaminating material is thoroughly whipped and broken up into a finer sediment which the successive screens and the clarifying materials pick up without clogging of the filter or impairing its efficiency. My advantage in using bone gaskets as screen separators is, they do not corrode, and dirt and sediment do not appear to cling to or set on the bone as it does on metal or other material spacers or gaskets. The perforated plates prevent the screens from being strained in case of a surge of high pressure water.

I have shown in Fig. 2 an adapter **34** threaded at **35** to engage with the internal threads **33** in the shell and internally threaded at **36**, the smaller internal thread being adapted to engage the threads on the exterior of a smaller faucet, and the same is also provided with external threads **37** adapted to engage internal threads on a faucet, the end of which is of greater internal diameter and internally threaded. The adapter thereby makes it possible to fit the filter to different sizes and styles of faucets.

In use the device is applied to a faucet or the like, it being immaterial which end is screwed onto the faucet since they are similar, and when the faucet is opened water will pass through the elements A through the activated carbon and silica and out through the assembly A at the opposite side. The water is thus strained and filtered on entering the device and is further strained and filtered upon leaving the filter. In use it is found that the water so filtered is discharged as clear as spring water without sediment and to a large extent, if not entirely, deodorized. In other words, the same is completely clarified.

For convenience in securing the parts together or separating the parts **1** and **2**, I prefer to knurl the same at the exterior on each part as indicated as **39**. While ordinarily not necessary, a gasket **40** may be inserted between the parts **1** and **2** as shown in Fig. 2. I have also shown the adapter provided with a flange about the same formed to permit its being gripped by a suitable wrench when applying or removing the adapter. While I have used brass screens, plates and fittings, any other suitable non-corrodible material may be used.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence, I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described, or uses mentioned.

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

1. A filter comprising a shell provided with tubular neck at opposite ends communicating with the interior of the shell and formed with a shoulder at the interior adjacent the juncture of the neck and body of the shell, a screening unit comprising a series of screens and a perforated plate arranged in each neck and seated on the shoulder at the inner end of each tubular neck, gaskets in each unit interposed between the several screens and plate thereof spacing the same appreciable distances apart, means for maintaining the units in the necks and the component parts of the units in assembled relation, the mesh of the screens in each unit varying from fine at the inner end adjacent the shoulder, to coarse intermediate the ends, and thence to fine at the outer end with the perforated plate being positioned intermediate the ends of the unit, and purifying and deodorizing material dispersed in the shell between said necks, consisting of layers of activated carbon and silica, the layer of silica disposed between the layers of activated carbon, and screens separating the layers.

2. A filter comprising a two-part shell provided with a tubular neck at each end thereof communicating with the interior of the shell and formed with a shoulder at the interior substantially at the juncture of each neck and the body of the shell, a screening unit comprising a series of screens and a perforated plate seated on each of said shoulders at the inner end of the tubular neck, bone gaskets in each unit interposed between the several screens and plate for separating and spacing the same, means for maintaining units in the necks and the component parts of the units in assembled relation, the mesh of the screens in each unit varying from substantially 100 mesh at the inner end near the shoulders to substantially 40 mesh intermediate the ends of the unit, and thence increasing to substantially 100 mesh at the outer end of the unit with said perforated plate being positioned intermediate the ends of the unit, purifying and deodorizing material dispersed in the shell between said necks, consisting of layers of hard granulated activated carbon and silica, the layer of silica arranged between the layers of activated carbon, and screens extending transversely the interior of the shell separating the layers of carbon and silica.

EDWARD H. MANSFIELD.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
433,710	Aims, Jr.	Aug. 5, 1890
742,254	Stern	Oct. 27, 1903
788,742	Weston	May 2, 1905
1,005,366	Towsley	Oct. 10, 1911
2,087,442	Nack	July 20, 1937

FOREIGN PATENTS

Number	Country	Date
34,994	Germany	Mar. 26, 1886
66	Great Britain	A. D. 1909