

IMPROVED STRUCTURE FOR WATER FILTERFIELD OF THE INVENTION

The present invention relates to a water filter, and particularly to an improved structure having various functions and advantages, in which the inner filter materials are visible from outside, the filter is adapted to conform to a faucet more closely and a packing sleeve can form a water-tight joint by engaging the faucet joint and a seal ring. In addition, it has a removable base for changing the velocity and the pressure of flow at the outlet.

BACKGROUND OF THE INVENTION

Air, sunlight and water are three major elements to the life of mankind. As nature has been severely polluted the purification of water for consumption is a very critical subject. Thus, water filters have been widely used and various kinds of water filter are on the market including those with a complex or simple structure and large or small size. A simple filter takes up a small amount of space which allows it to be directly fitted on a faucet, and constitutes a water filter thereof. A simple structure is generally popular with most families because the filter can be easily disassembled and washed clean. However, the faucet joint of existing water filters covers the filter

materials with a packing sleeve, and the user cannot check the condition thereof from the outside directly, and therefore cleaning delays cause the water filter to accumulate dirt for a long period and grow germs therein, which may lose its filter meaning. There are other defects such as water leakage which reduces the filtering effect, and too strong water flow at outlet which leads to splashing. Moreover, due to a defective design for the faucet joint of existing water filters, these prior water filters drop off frequently and that causes water leakages therefrom. In order to solve the defects found in any existing water filter as mentioned above, the inventor thus has achieved the present invention through accumulated experiences in this field of management and manufacture to allow people enjoying clean and convenient water for consumption.

SUMMARY OF THE INVENTION

One object of the present invention is to provide an improved structure for a water filter free of the problems of dropping off and water leakage.

Another object of the present invention is to provide an improved structure for a water filter which permits the condition of filter materials therein to be checked from outside, and a structure that is easy for assembly and disassembly.

Still another object of the present invention is to

provide an improved structure for a water filter which allows the velocity and the pressure of flow at the outlet to be changed.

This improved water filter according to the present invention comprises an upper cover, said upper cover being transparent, hollow and threaded at lower edge of the internal side thereof;

a faucet joint of soft plastics and protruding through a top opening of the upper cover,

a packing sleeve having a ring-shaped horizontal surface with a ring-shaped waterproof protrusion, and a leakproof seal ring at lower edge thereof; a main body which is transparent, ring-shaped, has a bottom with meshed means, and contains filter materials, a filter net and a sieve plate, and the external side of both upper and lower edges of the main body being threaded, the thread on external side at upper edge being screwed with said upper cover; a removable base which is like a transparent funnel, the internal side of the upper edge thereof being threaded for connection with the lower edge of said main body, and leakproof seal ring being positioned at the junction between the main body and the base; a water tube connection being located on the lower part of said base and the external side of said connection having a saw tooth ring to retain a tube.

With an assembly of the various members, as soon as the upper cover is fastened tightly on the main body, the

packing sleeve upwardly supports the faucet joint and downwardly compresses the leakproof seal ring so that a water-tight seal is obtained. The filter materials in the water filter are visible directly from outside not being covered by its members. The movable base being screwed under the main body allows it to be mounted/dismounted at random so to change water pressure at outlet.

Preferably the said faucet joint has a loop at upper part thereof to engage the faucet thereby to prevent the water filter dropping off the faucet, the faucet joint having a sealing opening at the middle which has inner and outer layers and has radially extending portions between said two layers to increase the elasticity thereof; a convex ring being provided at internal side on the lower edge of said sealing opening to improve the water-tightness thereof; and the lower part of the faucet joint being in a plane ring shape to permit the contents of said main body to be observed.

Preferably said packing sleeve has a conical drum portion gradually contracting toward the centre from the bottom to the top, and its outer wall is tight against the inner wall of the sealing opening on the faucet joint thereby to support the sealing opening so to prevent difficulty in mounting/dismounting the water filter due to the faucet joint being too soft; the water-proof ring shaped protrusion on the ring-shaped horizontal surface sealing the upper cover to the main body.

Techniques, elements and effects for the above and other objects, features and advantages of the present invention shall be better understood from the following description when taken in conjunction with the accompanying drawings in which a preferred embodiment of the present invention is shown by means of an illustrative example.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is an axial section through a filter according to the present invention;

Fig. 1A is a transverse section taken along line A-A of Fig. 1;

Fig. 2 is an exploded perspective view of the present invention;

Fig. 3 is an axial section through a prior water filter.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention comprises an upper cover 1, a faucet joint 2, a packing sleeve 3, a main body 4 and a movable base 5. The faucet joint 2 is over the packing sleeve 3 and is itself covered by the upper cover 1. The upper and lower parts of the main body are respectively screwed to the upper cover 1 and the movable base 5 to form a hollow container with the faucet joint 2 and the packing sleeve 3 encased by the upper cover 1 and the main body 4. The hollow container is filled with various filter

materials, a sieve net and a leakproof device to form a water filter. The shape, structure and function relating to various members according to the present invention will now be described in detail.

5 The upper cover 1 is a transparent and hollow cover body and is threaded at the lower inside edge thereof;

 The faucet joint 2 is made of soft plastics and its central part is a conical opening 22 for tightly sealing the mouth of the faucet. A convex ring 24 at lower edge of the
10 opening 22 divides the seal between the opening 22 and the faucet into two parts of ordinary and tight gripping effect in order to better resist leaking. In addition, the opening 22 is divided into inner and outer parts having radial links 23 between them to increase the elasticity of the opening 22
15 and thereby ensure a tight grip on the faucet to better resist leaking (see Fig. 1 and Fig. 1A). The upper part of the opening has a faucet loop 21 for hanging the water filter head securely on the faucet. The bottom part of the joint 2 is in a plane ring shape so that the joint 2 will
20 not cover the filter materials when being observed from a lateral face of water filter.

 The packing sleeve 3 is like a transparent and convex cylinder which is open from top to bottom and its upper part is in a conical drum portion 32 form gradually contracted
25 from bottom to top. The outer face of the drum portion 32 fits tightly against the inner face of the opening 22 on the faucet joint 2 to support that opening. The lower part of

3 is tubular and has a leakproof seal ring 34 positioned underneath the lower edge thereof. The central part of the sleeve 3 is horizontal and ring-shaped, and its upper side has a ring-shaped protruding water-proof ring 31 with a packing seal effect; and the hollow part within the packing sleeve 3 is filled with filter cotton 33 as illustrated.

The main body 4 is transparent ring-shaped, and its middle section has a sieve plate 41 located laterally so as to separate the body 4 into an upper chamber and a lower chamber. The upper chamber is equipped with a galvanized wire net 44 and a positively charged ionic filtering material 43; the lower chamber is equipped with an active carbon filtering material 45. The bottom of the body 4 has meshes, i.e. the sieve plate 42 itself; the external sides at lower and upper edges on the main body 4 are threaded and joined to the upper cover 1 and the base 5 respectively, and the internal side at its upper edge has steps for locating a sieve plate 35.

The movable base 5 is like a transparent funnel, and the internal side of its upper edge is threaded so to be screwed to the main body 4, and the junction has a leakproof seal ring 46; the lower part of the base 5 has a faucet joint 51 and the external side of said joint has a saw tooth ring so to hold a water tube (not shown) firmly.

On assembly, activated carbon 45 is first filled into the main body 4 followed by a sieve plate 41, a galvanized wire net 44 and positively charged ionic material 43 in

sequence, and then the sieve plate 35 is inserted into the steps. The seal ring 34 is fitted onto the main body 4, and then the filter cotton 33 is inserted, followed by the packing sleeve 3 and faucet joint 2 on said sieve plate 35 in sequence. Finally the upper cover 1 is screwed to the main body 4. The filter _____ is thus completed. Whether to install the movable base 5 or not is subject to the user's requirement. If a great filtered water pressure and concentrated flow is required, said leakproof seal ring 46 and movable base 5 should be fitted. However, they may be omitted in the event that water splashes about due to excessive water pressure after they are fitted.

For disassembly, the screwed junction between said upper cover 1 and main body 4 is turned so that the full contents therein may be removed in accordance with reversed motion sequences of a previous assembly. The filter is rather easy to assemble and disassemble, and so any user is able to finish the full sequence within 1 minute. Therefore, it is very convenient for the users (see Fig. 2).

When the filter is assembled, the packing sleeve 3 therein being urged downwardly in company with said main body 4 to hold the leakproof seal ring 34 tightly enough to make a water-tight condition, the upper cover 1 is fitted onto the faucet joint 2 to give a water-tight condition; the conical drum portion 32 on upper part of said packing sleeve 3 supports the opening 22 within said faucet joint so that

the lower part of the joint 2 made of soft plastics is secure and stable.

As soon as supply water enters into the filter it passes through the inlet of the faucet joint 2, packing sleeve 3, main body 4 and movable base 5 to flow out of the outlet, and because the respective junction between these four members is equipped with a water-proof ring 31, leakproof seal ring 34 and leakproof seal ring 46, the water filter constitutes a sealed container without any risk of water leakage therefrom.

To conclude the descriptions, the present invention with its special structures including a water filter joint, packing sleeve and a removable base not only improved the known defects such as water leakage, frequently leaving off the filter and water splashing about etc., but also has advantages such as ease of observation, assembly and disassembly.

Obviously, many modifications may be made without departing from the basic teaching of the present invention. Accordingly, it will be appreciated by those skilled in the art that within the scope of the appended claims, the invention may be practiced other than has been specifically described herein.

CLAIMS:

1. A water filter comprising:

an upper cover, said upper cover being transparent,
hollow and threaded at lower edge of the internal side
thereof;

a faucet joint of soft plastics and protruding through
a top opening of the upper cover;

a packing sleeve having a ring-shaped _____
horizontal surface with a ring-shaped waterproof protrusion;
a leakproof seal ring at lower edge of said packing sleeve;

a main body which is transparent, ring-shaped, has a
bottom with meshed means, and contains filter materials, a
filter net and a sieve plate, and the external side of both
upper and lower edges of the main body being threaded, the
thread on external side at upper edge being screwed with
said upper cover; a removable base which is like a
transparent funnel, the internal side of the upper edge
thereof being threaded for connection with the lower edge of
said main body, and leakproof seal ring being positioned at
the junction between the main body and the base; a water
tube connection being located on the lower part of said base
and the external side of said connection having a saw tooth
ring to retain a tube;

2. A water filter according to claim 1, wherein said
faucet joint has a loop at upper part thereof to engage the
faucet thereby to prevent the water filter dropping off the



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faucet, the faucet joint having a sealing opening at the middle which has inner and outer layers and has radially extending portions between said two layers to increase the elasticity thereof; a convex ring being provided at internal side on the lower edge of said sealing opening to improve the water-tightness thereof; and the lower part of the faucet joint being in a plane ring shape.

3. A water filter as set forth in claim 2, wherein said packing sleeve has a conical drum portion gradually contracting toward the centre from the bottom to the top, and its outer wall is tight against the inner wall of the sealing opening on the faucet joint thereby to support the sealing opening so to prevent difficulty in mounting/dismounting the water filter due to the faucet joint being too soft; the water-proof ring shaped protrusion on the ring-shaped horizontal surface sealing the packing sleeve to the faucet joint.

4. A water filter substantially as described herein with reference to Figs. 1, 1a and 2 of the accompanying drawings.

