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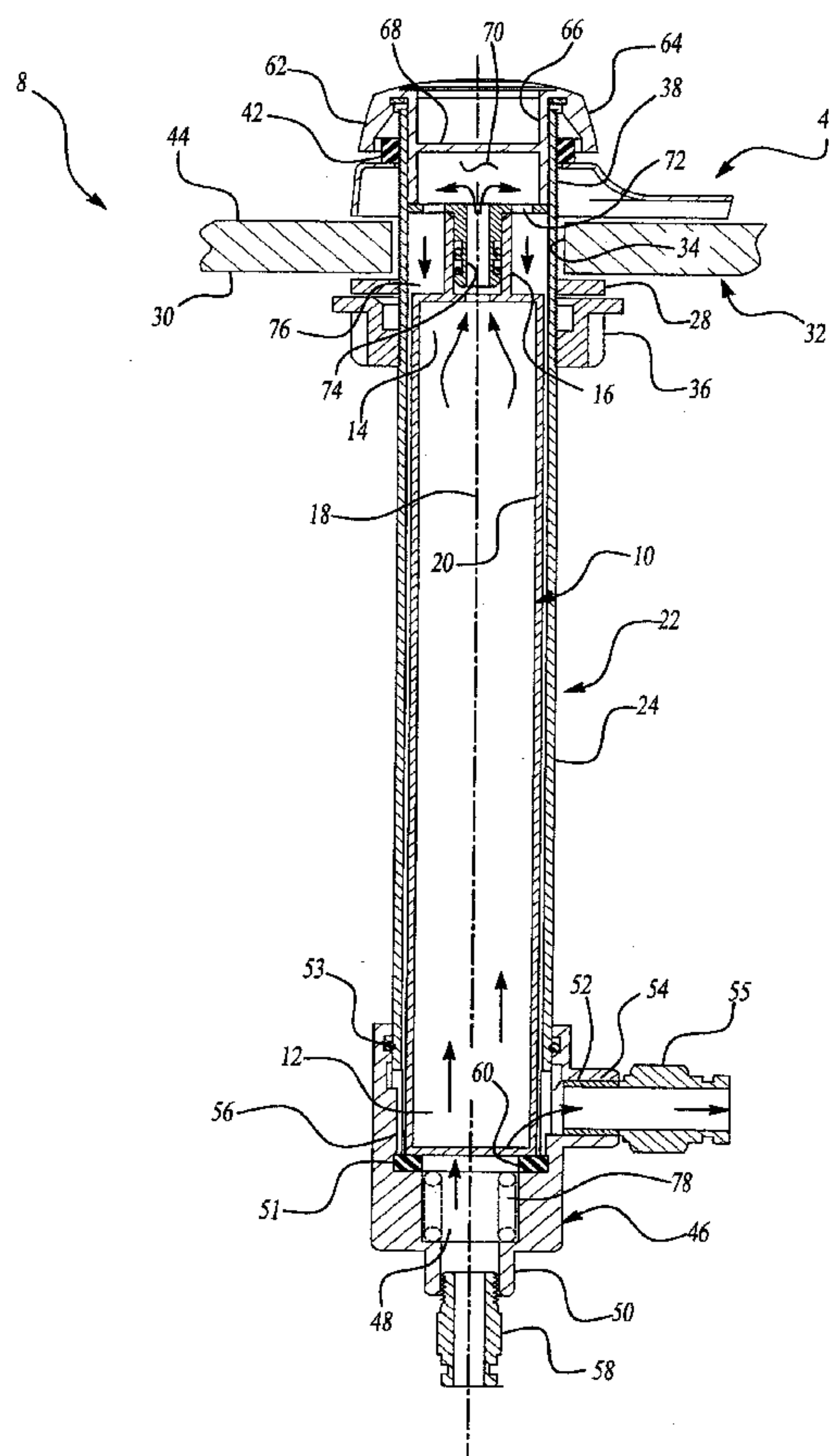
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(51) Int.Cl.⁷ B01D 35/02

(30) 1999/04/21 (60/130,576) US

(54) **CARTOUCHE DE FILTRE POUVANT ETRE MONTEE AU-DESSUS DU PONT**

(54) **ABOVE DECK MOUNTABLE FILTER CARTRIDGE FOR A FILTER ASSEMBLY**



(57) A filter assembly 8 includes a filter cartridge housing 22 mounted in an opening 34 of a deck 32. A filter cartridge 10 is disposed in the housing and is accessible from above the deck 32. The filter cartridge 10 is operatively positioned in the housing 22 by a cap 62 connected to close the top of the housing 22. Water lines are connected to the housing 22 below the deck 32 to deliver unfiltered water to an inlet nipple 50 into the housing 22 for passage through the filter cartridge 10 so that filtered water will be discharged therefrom at the outlet nipple 54.



ABSTRACT

A filter assembly 8 includes a filter cartridge housing 22 mounted in an opening 34 of a deck 32. A filter cartridge 10 is disposed in the housing and is accessible from above the deck 32. The filter cartridge 10 is operatively positioned in the housing 22 by a cap 62 connected to close the top of the housing 22. Water
5 lines are connected to the housing 22 below the deck 32 to deliver unfiltered water to an inlet nipple 50 into the housing 22 for passage through the filter cartridge 10 so that filtered water will be discharged therefrom at the outlet nipple 54.

**ABOVE DECK MOUNTABLE FILTER
CARTRIDGE FOR A FILTER ASSEMBLY**

This application claims the benefit of U.S. Provisional application No. 60/130,576, filed April 21, 1999

DESCRIPTION OF INVENTION

The invention relates to an above deck mountable filter cartridge for a filter assembly and particularly relates to an above deck mountable filter cartridge for a filter assembly that is top loaded for installation or replacement of the filter cartridge disposed in a filter cartridge housing mounted in a sink hole or an opening in the deck or the deckplate. A top member or cap is affixed to the filter cartridge housing from above the deck or deckplate to secure the filter cartridge in the housing or upon removal of the cap provides quick and easy access to or replacement of the filter cartridge. The filter cartridge housing is provided with inlet and outlet lines for water that are connected to the housing below the deck.

BACKGROUND OF THE INVENTION

Prior art filtering devices used filters or filter cartridges that were mounted from below the deck or mounted in the spout or mounted in the spray head of the spout. Each of the prior art devices had disadvantages such as: the below deck devices were inconvenient and lacked ready access to or replacement of the filter devices; the filter devices mounted in the spout provided limited access and required a larger diameter spout; and the filter devices mounted in the spray head made the spray head large, heavy and difficult and awkward to change the filter devices.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a filter assembly to include a top mounted filter cartridge that provides access thereto and is removable therefrom from above the deck; which is simple to assemble, economical to produce
5 and highly reliable in operation.

It is another object of the present invention to provide a filter assembly that can be utilized with faucet assemblies that are of conventional size and design; that eliminate the bulky faucet assemblies of prior art filter devices; that provides top or above the deck access to the filter device for removable, replacement or inspection
10 in a convenient manner by simply removing a top cap that is also mounted above the deck; that eliminates the under the deck inconvenience of working in tight, inaccessible spaces and/or with special tools and hard to reach fittings.

Other objects, features and advantages of the present invention will become more fully apparent from the following detailed description of the present invention,
15 the appended claims and the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a sectional side elevational view of the filter assembly according to the present invention.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT OF THE INVENTION

FIG. 1 illustrates the preferred embodiment of the present invention of a
25 filter assembly 8 that has a filter cartridge 10 which is formed with an inlet end 12 having a plurality of inlet openings (not shown) therein and an outlet end 14 which

terminates in a cylindrical nozzle 16 formed about a central axis 18. A cylindrical impervious cover 20 encloses the filter cartridge 10 by extending axially from the inlet end 12 to the outlet end 14. The filter cartridge 10 is formed with a uniform diameter along the full length of the cover 20 thereof.

5 The filter cartridge 10 will be filled with a suitable filter media such as, for example, granular activated carbon (GAC) which is useful for filtering the undesirable elements in the unfiltered water which are associated with chlorine, taste and odor. Other known water filtering media could be added to the GAC for effectively reducing various metals and minimizing any bacteria or other organisms
10 which may be in the water to be filtered. Also, iron exchange resins could be added to treat the water being filtered for color and taste. A pre-filter porous mesh could be used within the filter cartridge 10 adjacent to and inwardly of the inlet end 12 to preclude sediment and suspended particulate from interfering with the filtering action. Further, a post-filter porous material such as, for example, foam could be
15 inserted into the filter cartridge 10 above the filter media adjacent the nozzle 16 at the outlet end 14 of the filter media within the filter cartridge 10 during processing and handling of the filter cartridge 10 prior to installing the filter cartridge 10 in the filter assembly 8.

 The filter assembly 8 has a filter cartridge housing 22 with a cylindrical
20 shape of a diameter slightly larger than the diameter of the filter cartridge 10. An annular chamber 24 is formed in the space between the exterior of the cover 20 of the filter cartridge 10 and the interior of the housing 22. The annular chamber 24 extends substantially the full axial length of the housing 22. The upper section 26 of the housing 22 is externally threaded to threadedly receive a nut 28 that is shifted

into engagement with the under side 30 of a deck 32 having an opening 34 through which the housing 22 extends. A lock nut 36 is raised to engage and lock the position of the nut 28. The upper section 26 of the housing 28 extends through an opening 38 in a deckplate 40 and nut 42 threadedly engages the housing 22 above the deckplate 40 at its opening 38 to force the deckplate 40, to which the filter cartridge housing 22 is now connected, into engagement with the upper surface 44 of the deck 32. Of course, if the deckplate 40 were not to be used, the filter cartridge housing 22 could be directly connected to the deck 32 at the deck opening 34 thereof. A union block 46 is connected to the lower end 56 of the housing 22. The union block 46 includes an inlet chamber 48 with an inlet nipple 50 and an outlet chamber 52 with an outlet nipple 54 to which is connected an outlet connector 55. An inlet connector 58 is mounted in the inlet nipple 50 to deliver inlet water therein as is shown by the directional arrow.

The filter cartridge 10 will be installed from above the top of the deck 32 into the filter cartridge housing 22 so that the inlet end 12 is disposed in the union block 46. The inlet end 12 of the filter cartridge 10 is suitably sealed from the outlet chamber 52 and in communication with the inlet chamber 48 through an opening 60 at the bottom of the housing 22. Installation of the filter cartridge 10 in the housing 22 will place the cartridge nozzle 16 in an area surrounded by the opening 34 in the deck 32 and at about the same elevation thereof.

A cap 62 having a down-turned outer cover 64 extending over the nut 42 and an inner cylindrical portion 66 that is threadedly engaged in a leak-proof manner to internal threads formed at the top of the upper section 26 of the housing 22. The cap 62 is closed by a horizontal member 68 to define a cap chamber 70 that has a

plurality of openings 72 formed at its lower end and a central projection 74 which has a central opening 76. The central projection 74 is engaged in and aligns with the cartridge nozzle 16 so that filtered water being discharged from the filter cartridge 10 will enter the cap chamber 70. From the cap chamber 70, water is
5 delivered through openings 72 into a filtered water chamber 76. From filtered water chamber 76, the water enters the annular chamber 24 for discharge into the outlet chamber 52 and the outlet nipple 54 and the outlet connector 55 connected thereto to be discharged therefrom in the direction shown by the generally horizontal arrow.

10 Removal of the cap 62 will provide access from above the deck 32 to permit the filter cartridge 10 to be installed, inspected or replaced from above the deck 32. The various components of the filter assembly 8 will be interconnected to each other in a leak-proof manner or, when necessary, suitable seals are disposed at the location of the various components to prevent leakage therebetween. See, for
15 example, bottom seal 51 and O-ring seal 53. Also, a spring member 78 may be disposed in the inlet chamber 48 to engage the bottom of the filter cartridge 10 and be compressed upon insertion thereof and connection of the cap 62 to complete the installation thereof. Once the cap 62 is removed, the spring 78 will expand to force the filter cartridge upwardly, expose the cartridge nozzle 16 or make it easier to
20 grasp to remove the filter cartridge 10 from the housing 22.

The invention being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the invention, and all such modifications as would be obvious

to one skilled in the art are intended to be included within the scope of the following claims.

CLAIMS

What is claimed is:

1. A filter assembly comprising:
 - a filter cartridge housing adapted to be mounted in an opening of a deck;
 - a filter cartridge disposed in the housing and removable therefrom
5 from above the deck;
 - water lines connected to the housing below the deck to deliver water to the filter cartridge and to discharge water from the filter cartridge; and
 - a cap connected to the housing from above the deck to affix the filter cartridge therein and adapted to be removed from the housing to provide access to
10 the filter cartridge.
2. The filter assembly of claim 1 wherein said filter cartridge housing is supported by a deckplate mountable upon an upper surface of the deck.
3. The filter assembly of claim 1, wherein the filter cartridge housing is affixed to the deck by an upper and a lower nut which each engage a threaded outer surface of the housing.
4. The filter assembly of claim 1, wherein said cap defines a cap chamber formed therein to receive filtered water from said filter cartridge, said cap chamber including a passage to discharge filtered water therefrom.

5. The filter assembly according to claim 4, wherein said passage in said cap chamber delivers filtered water to an annular discharge passage between an interior of said filter cartridge housing and an exterior surface of the filter cartridge.

6. The filter assembly of claim 5, further comprising a union block affixed to a lower end of the housing, the union block having an inlet and outlet wherein the inlet delivers water to the filter cartridge and the outlet delivers filtered water from the annular discharge passage to be discharged through the outlet.

7. The filter assembly according to claim 1, wherein said filter cartridge includes a nozzle portion at an upper end thereof, said cap including a projecting portion having an opening therethrough, said projecting portion engaging with said nozzle portion of said filter cartridge for receiving filtered water from said filter
5 cartridge.

8. The filter assembly of claim 1 further comprising a spring disposed in said filter cartridge housing below said filter cartridge to be compressed upon said cap being connected to said filter cartridge housing and to expand to raise said filter cartridge upon said cap being disconnected from said filter cartridge housing.

9. The filter assembly of claim 1, wherein said cap is threadedly attached to said filter cartridge housing.

