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Removable Pipe Filter Device

Abstract

A removable pipe filter device for blocking and removing debris from traveling through piping includes a first pipe having a pair of open ends being configured for connection to a drainpipe. The first pipe defines a conduit between the pair of open ends. A second pipe is coupled to the first pipe. The second pipe is in environmental communication with the conduit between the pair of open ends of the first pipe. The second pipe has a distal edge relative to the first pipe defining an opening into the second pipe. A filter is releasably couplable to the second pipe. The filter extends into the second pipe. The filter inhibits solid debris entering the conduit through a first end of the pair of open ends from exiting the conduit through a second end of the pair of open ends when the filter is coupled to the second pipe.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS
[0001] Not Applicable
STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT
[0002] Not Applicable
THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT
[0003] Not Applicable
INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC OR AS A TEXT FILE VIA THE OFFICE ELECTRONIC FILING SYSTEM.
[0004] Not Applicable
STATEMENT REGARDING PRIOR DISCLOSURES BY THE INVENTOR OR JOINT INVENTOR
[0005] Not Applicable
BACKGROUND OF THE INVENTION
(1) Field of the Invention
[0006] The disclosure relates to filters and more particularly pertains to a new filter for blocking and removing debris from traveling through piping.
(2) Description of Related Art Including Information Disclosed Under 37 CFR 1.97 and 1.98
[0007] The prior art relates to filters. More particularly, the prior art relates to filters for blocking solid debris, such as hair, from traveling through drainpipes. Hair clogs are a common and frustrating problem, slowing the flow of water through drainpipes. Once the flow rate of the water is reduced, the water can pool in the bottom of the sink, bathtub, or shower, which can be frustrating and unhygienic. The prior art has disclosed some devices for reducing the amount of hair and other solid debris that travels through drainpipes. For example, the prior art discloses mesh covers for the inlet into a drainpipe to capture hair before the hair enters the drainpipe. However, the devices in the prior art have limited efficacy, and debris buildup remains a prevalent issue. Thus, there is a need in the art for an improved filter device that can catch and trap hair, lint, and other solid debris before the solid debris accumulates and clogs the drainpipe. Ideally, such a device would be easy to install on existing drainpipes and would be easy to remove for cleaning and proper disposal of the solid debris.
BRIEF SUMMARY OF THE INVENTION
[0008] An embodiment of the disclosure meets the needs presented above by generally comprising a first pipe having a pair of open ends being configured for connection to a drainpipe. The first pipe defines a conduit between the pair of open ends. A second pipe is coupled to the first pipe. The second pipe is in environmental communication with the conduit between the pair of open ends of the first pipe. The second pipe has a distal edge relative to the first pipe defining an opening into the second pipe. A filter is releasably couplable to the second pipe. The filter extends into the second pipe. The filter is configured to inhibit solid debris entering the conduit through a first end of the pair of open ends from exiting the conduit through a second end of the pair of open ends when the filter is coupled to the second pipe.
[0009] There has thus been outlined, rather broadly, the more important features of the disclosure in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are additional features of the disclosure that will be described hereinafter and which will form the subject matter of the claims appended hereto.
[0010] The objects of the disclosure, along with the various features of novelty which characterize the disclosure, are pointed out with particularity in the claims annexed to and forming a part of this disclosure.

Description

BRIEF DESCRIPTION OF SEVERAL VIEWS OF THE DRAWING(S)

[0011] The disclosure will be better understood and objects other than those set forth above will become apparent when consideration is given to the following detailed description thereof. Such description makes reference to the annexed drawings wherein:

[0012] FIG. **1** is an exploded isometric view of a removable pipe filter device according to an embodiment of the disclosure.

[0013] FIG. **2** is a side view of an embodiment of the disclosure.

[0014] FIG. **3** is a cross-sectional view of an embodiment of the disclosure.

[0015] FIG. **4** is a detail view of an embodiment of the disclosure.

[0016] FIG. **5** is a top view of an embodiment of the disclosure.

[0017] FIG. **6** is an in-use view of an embodiment of the disclosure.

[0018] FIG. **7** is an in-use view of an embodiment of the disclosure.

DETAILED DESCRIPTION OF THE INVENTION

[0019] With reference now to the drawings, and in particular to FIGS. **1** through **7** thereof, a new filter embodying the principles and concepts of an embodiment of the disclosure and generally designated by the reference numeral **10** will be described.

[0020] As best illustrated in FIGS. **1** through **7**, the removable pipe filter device **10** generally comprises a first pipe **12** with a pair of open ends **14** that is configured for connection to a drainpipe **16**. The first pipe **12** defines a conduit **74** between the pair of open ends **14**. The first pipe **12** may be elongated.

[0021] A second pipe **18** is coupled to the first pipe **12**. The second pipe **18** is generally positioned between the pair of open ends **14**. The second pipe **18** is in environmental communication with the conduit **74** between the pair of open ends **14** of the first pipe **12**. The second pipe **18** has a distal edge **20** relative to the first pipe **12**. The distal edge **20** defines an opening **22** into the second pipe **18**. The second pipe **18** may be perpendicular to the first pipe **12**.

[0022] A filter **24** is releasably couplable to the second pipe **18**. The filter **24** extends into the conduit **74** through the second pipe **29**. The filter **24** is configured to inhibit solid debris **26** that enters the conduit **74** through a first end of the pair of open ends **14** from exiting the conduit **74** through a second end of the pair of open ends **14** when the filter **24** is coupled to the second pipe **18**. The filter **24** is configured to define a collection point for the solid debris **26** to facilitate removal of the solid debris **26** and inhibit the conduit **74** from becoming fully clogged by the solid debris **26**.

[0023] The filter **24** may further comprise a cap **28** that has a top plate **30** and a base **32**. The cap **28** may have a circular shape that is complementary to a shape of the opening **22** into the second pipe **18**. The top plate **30** may have an upper diameter and the base **32** may have a lower diameter. The upper diameter exceeds the lower diameter such that the base **32** is positionable within the opening **22**. The upper diameter exceeds an inner diameter of the second pipe **18** wherein the top plate **30** is positionable on the distal edge **20** of the second pipe **18** to cover the opening **22**.

[0024] The second pipe **18** may have a threaded inner surface **34** that is positioned adjacent to the distal edge **20**. The base **32** of the cap **28** may have a threaded outer surface **36**. The threaded outer surface **36** of the base **32** is complementary to the threaded inner surface **34** of the second pipe **18** wherein the cap **28** is threadably couplable to the second pipe **18**.

[0025] A grip **38** may be coupled to and extend upwardly from the top plate **30** of the cap **28**. The grip **38** is generally configured to facilitate a user in decoupling the cap **28** from the second pipe **18**. The grip **38** may have a square shape. The grip **38** may have a beveled upper edge **40** that is distal to the top plate **30** of the cap **28**.

[0026] A fin **42** may be coupled to and extend downwardly from the base **32** of the cap **28**. The fin

42 extends through the second pipe **18** and into the conduit **70** of the first pipe **12** wherein the fin **42** is positioned between the first end and the second end of the pair of open ends **14** when the filter **24** is coupled to the second pipe **18**.

[0027] The fin **42** may further comprise a peripheral wall **44** and a mesh panel **52**. The peripheral wall **44** may generally have a D-shape, or another shape that is complementary to the shape of the first pipe **12** and the second pipe **18**. For example, the peripheral wall **44** may have a pair of opposing lateral sides **46** and a curved side **48** that is coupled to and extends between the pair of opposing lateral sides **46**. The pair of opposing lateral sides **46** may be parallel to each other. A straight side **50** may be coupled to and extend between the pair of opposing lateral sides **46**. The straight side **50** may be distal to the curved side **48**. In other words, the straight side **50** may be positioned proximate to the cap **28** and the curved side **48** may be positioned proximate to the first pipe **12**. The straight side **50** may be perpendicular to each of the pair of opposing lateral sides **46**. The straight side **50** may have a length that is smaller than the lower diameter of the base **32** of the cap **28**.

[0028] The curved side **48** may have an interior face **54** that is positioned adjacent to the mesh panel **52**. The interior face **54** may be convexly arcuate between a primary side of the pair of opposing lateral sides **46** and a secondary side of the pair of opposing lateral sides **46**.

[0029] The mesh panel **52** is coupled to the peripheral wall **44**. The mesh panel **52** generally extends between the pair of opposing lateral sides **46**, the curved side **48**, and the straight side **50**. The mesh panel **52** is foraminous wherein the mesh panel **52** is configured to inhibit the solid debris **26** from passing through the filter **24** while permitting fluids to pass through the filter **24**.

[0030] A coupler **56** may pivotably couple the fin **42** to the base **32** of the cap **28** wherein the fin **42** is configured to rotate around the coupler **56** beneath the cap **28**. Rotation around the coupler **560** facilitates positioning the mesh panel **52** between the first end and the second end of the pair of open ends **14** of the first pipe **12**. For example, when the mesh panel **52** is perpendicular to each of the pair of open ends **14**, the mesh panel **52** can function as a blockade between the pair of open ends **14** to inhibit the solid debris **26** from passing through the conduit **74**. In some embodiments, the coupler **56** may permit the fin **42** to rotate 360° beneath the cap **28**.

[0031] The coupler **56** may further comprise a head **58** that is coupled to and extends upwardly from the straight side **50** of the peripheral wall **44**. The head **58** may further comprise a bar **60** that is perpendicular to the straight side **50** of the peripheral wall **44**. A dome **62** may be coupled to the bar **60** distally to the straight side **50**. The dome **62** has a diameter exceeding a diameter of the bar **60**. A brace **64** may be coupled to and extend downwardly from the base **32** of the cap **28**. The brace **64** may be coupled to the head **58** wherein the head **58** is rotatable within the brace **64**.

[0032] A rail **66** may be coupled to the first pipe **12** and the second pipe **18**. The rail **66** may be positioned on an interior surface **68** of the first pipe **12** and the second pipe **18**. The rail **66** may be centrally positioned between the first end and the second end of the pair of open ends **14** of the first pipe **12**. The rail **66** engages the filter **24** when the filter **24** is coupled to the second pipe **18** wherein the rail **66** is configured to fix a position of the filter **24** relative to the pair of open ends **14** of the first pipe **12**.

[0033] The rail **66** may further comprise a groove **70** having a shape that is complementary to a shape of the peripheral wall **44** of the fin **42** wherein the peripheral wall **44** is positionable within the groove **70**. A free upper end **72** of the rail **66** may be positioned within the second pipe **18**. The free upper end **66** may be spaced from the distal edge **20** of the second pipe **18**.

[0034] In use, the first pipe **12** is configured to be fluidly coupled to the drainpipe **16** wherein the first end of the pair of open ends **14** defines an inlet into the conduit **74** from a primary pipe of the drainpipe **16** and the second end of the pair of open ends **14** defines an outlet from the conduit **74** into a secondary pipe of the drainpipe **16**. The filter **24** is configured to inhibit the solid debris **26** from passing into the secondary pipe of the drainpipe **16** through the outlet. The solid debris **26** can collect at the collection point defined by the filter **24**. Because the filter **24** is removable, the solid

debris **26** can be easily removed from the collection point without clogging the drainpipe **16**.
[0035] With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of an embodiment enabled by the disclosure, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by an embodiment of the disclosure.
[0036] Therefore, the foregoing is considered as illustrative only of the principles of the disclosure. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the disclosure to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the disclosure. In this patent document, the word “comprising” is used in its non-limiting sense to mean that items following the word are included, but items not specifically mentioned are not excluded. A reference to an element by the indefinite article “a” does not exclude the possibility that more than one of the element is present, unless the context clearly requires that there be only one of the elements.

Claims

1. A pipe filtering assembly comprising: a first pipe having a pair of open ends being configured for connection to a drainpipe, the first pipe defining a conduit between the pair of open ends; a second pipe being coupled to the first pipe wherein the second pipe is in environmental communication with the conduit between the pair of open ends of the first pipe, the second pipe having a distal edge relative to the first pipe defining an opening into the second pipe; and a filter being releasably couplable to the second pipe, the filter extending into the second pipe wherein the filter is configured to inhibit solid debris entering the conduit through a first end of the pair of open ends from exiting the conduit through a second end of the pair of open ends when the filter is coupled to the second pipe.
2. The pipe filtering assembly of claim 1, the filter further comprising: a cap having a top plate and a base; and a fin being coupled to and extending downwardly from the base of the cap, the fin extending through the second pipe and into the conduit of the first pipe wherein the fin is positioned between the first end and the second end of the pair of open ends when the filter is coupled to the second pipe.
3. The pipe filtering assembly of claim 2, the fin further comprising: a peripheral wall; and a mesh panel being coupled to the peripheral wall, the mesh panel being foraminous wherein the mesh panel is configured to inhibit the solid debris from passing through the filter while permitting fluids to pass through the filter.
4. The pipe filtering assembly of claim 3, further comprising a coupler pivotably coupling the fin to the base of the cap.
5. The pipe filtering assembly of claim 4, the coupler further comprising: a head being coupled to and extending upwardly from the straight side of the peripheral wall; and a brace being coupled to and extending downwardly from the base of the cap, the brace being coupled to the head wherein the head is rotatable within the brace.
6. The pipe filtering assembly of claim 5, the head further comprising: a bar being perpendicular to the straight side of the peripheral wall; and a dome being coupled to the bar distally to the straight side, the dome having a diameter exceeding a diameter of the bar.
7. The pipe filtering assembly of claim 3, further comprising a rail being coupled to the first pipe and the second pipe, the rail engaging the filter when the filter is coupled to the second pipe wherein the rail is configured to fix a position of the filter relative to the first pipe, the rail further including a groove having a shape being complementary to a shape of the peripheral wall of the fin

wherein the peripheral wall is positionable within the groove.
8. The pipe filtering assembly of claim 3, wherein the peripheral wall has a pair of opposing lateral sides and a curved side being coupled to and extending between the pair of opposing lateral sides, wherein a straight side is coupled to and extends between the pair of opposing lateral sides, the straight side being distal to the curved side, wherein the mesh panel extends between the pair of opposing lateral sides, the curved side, and the straight side.
9. The pipe filtering assembly of claim 8, wherein the curved side has an interior face being positioned adjacent to the mesh panel, the interior face being convexly arcuate between a primary side of the pair of opposing lateral sides and a secondary side of the pair of opposing lateral sides.
10. The pipe filtering assembly of claim 8, wherein the straight side is perpendicular to the pair of opposing lateral sides.
11. The pipe filtering assembly of claim 2, wherein the cap has a circular shape being complementary to a shape of the opening into the second pipe.
12. The pipe filtering assembly of claim 2, wherein the top plate has an upper diameter and wherein the base has a lower diameter, the upper diameter exceeding the lower diameter wherein the base is positionable within the opening, the upper diameter exceeding an inner diameter of the second pipe wherein the top plate is positionable on the distal edge of the second pipe.
13. The pipe filtering assembly of claim 2, wherein the second pipe has a threaded inner surface being positioned adjacent to the distal edge, the base of the cap having a threaded outer surface, the threaded outer surface of the base being complementary to the threaded inner surface of the second pipe wherein the cap is threadably couplable to the second pipe.
14. The pipe filtering assembly of claim 2, further comprising a grip being coupled to and extending upwardly from the top plate, the grip being configured to facilitate a user in decoupling the cap from the second pipe.
15. The pipe filtering assembly of claim 14, wherein the grip has a square shape.
16. The pipe filtering assembly of claim 14, wherein the grip has a beveled upper edge being distal to the top plate of the cap.
17. The pipe filtering assembly of claim 1, further comprising a rail being coupled to the first pipe and the second pipe, the rail engaging the filter when the filter is coupled to the second pipe wherein the rail is configured to fix a position of the filter relative to the first pipe.
18. The pipe filtering assembly of claim 17, wherein the rail is centrally positioned between the first end and the second end of the pair of open ends of the first pipe.
19. The pipe filtering assembly of claim 1, wherein the first pipe is configured to be fluidly coupled to the drainpipe wherein the first end defines an inlet into the conduit from a primary pipe of the drainpipe and the second end defines an outlet from the conduit into a secondary pipe of the drainpipe, the filter being configured to inhibit the solid debris from passing into the secondary pipe of the drainpipe through the outlet.
20. A pipe filtering assembly comprising: a first pipe being elongated, the first pipe having a pair of open ends being configured for connection to a drainpipe, the first pipe defining a conduit between the pair of open ends; a second pipe being coupled to the first pipe between the pair of open ends wherein the second pipe is in environmental communication with the conduit between the pair of open ends of the first pipe, the second pipe having a distal edge relative to the first pipe defining an opening into the second pipe; a filter being releasably couplable to the second pipe, the filter extending into the second pipe wherein the filter is configured to inhibit solid debris entering the conduit through the a first end of the pair of open ends from exiting the conduit through a second end of the pair of open ends when the filter is coupled to the second pipe wherein the filter is configured to define a collection point for the solid debris to facilitate removal of the solid debris and inhibit the conduit from becoming fully clogged by the solid debris, the filter further comprising: a cap having a top plate and a base, the cap having a circular shape being complementary to a shape of the opening into the second pipe, the top plate having an upper

diameter, the base having a lower diameter, the upper diameter exceeding the lower diameter wherein the base is positionable within the opening, the upper diameter exceeding an inner diameter of the second pipe wherein the top plate is positionable on the distal edge of the second pipe; the second pipe having a threaded inner surface being positioned adjacent to the distal edge, the base of the cap having a threaded outer surface, the threaded outer surface of the base being complementary to the threaded inner surface of the second pipe wherein the cap is threadably couplable to the second pipe; a grip being coupled to and extending upwardly from the top plate, the grip being configured to facilitate a user in decoupling the cap from the second pipe, the grip having a square shape, the grip having a beveled upper edge being distal to the top plate of the cap; a fin being coupled to and extending downwardly from the base of the cap, the fin extending through the second pipe and into the conduit of the first pipe wherein the fin is positioned between the first end and the second end of the pair of open ends when the filter is coupled to the second pipe, the fin further comprising: a peripheral wall having a pair of opposing lateral sides and a curved side being coupled to and extending between the pair of opposing lateral sides, the pair of opposing lateral sides being parallel to each other, a straight side being coupled to and extending between the pair of opposing lateral sides, the straight side being distal to the curved side wherein the straight side is positioned proximate to the cap, the straight side being perpendicular to the pair of opposing lateral sides, the straight side having a length being smaller than the lower diameter of the base of the cap; a mesh panel being coupled to the peripheral wall, the mesh panel extending between the pair of opposing lateral sides, the curved side, and the straight side, the mesh panel being foraminous wherein the mesh panel is configured to inhibit the solid debris from passing through the filter while permitting fluids to pass through the filter; wherein the curved side has an interior face being positioned adjacent to the mesh panel, the interior face being convexly arcuate between a primary side of the pair of opposing lateral sides and a secondary side of the pair of opposing lateral sides, a coupler pivotably coupling the fin to the base of the cap wherein the fin is configured to rotate around the coupler beneath the cap, the coupler further comprising: a head being coupled to and extending upwardly from the straight side of the peripheral wall, the head further comprising: a bar being perpendicular to the straight side of the peripheral wall; a dome being coupled to the bar distally to the straight side, the dome having a diameter exceeding a diameter of the bar; a brace being coupled to and extending downwardly from the base of the cap, the brace being coupled to the head wherein the head is rotatable within the brace; a rail being coupled to the first pipe and the second pipe, the rail being positioned on an interior surface of the first pipe and the second pipe, the rail being centrally positioned between the first end and the second end of the pair of open ends of the first pipe, the rail engaging the filter when the filter is coupled to the second pipe wherein the rail is configured to fix a position of the filter relative to the first pipe, the rail further comprising: a groove having a shape being complementary to a shape of the peripheral wall of the fin wherein the peripheral wall is positionable within the groove; a free upper end being positioned within the second pipe, the free upper end being spaced from the distal edge of the second pipe; and wherein the first pipe is configured to be fluidly coupled to the drainpipe wherein the first end defines an inlet into the conduit from a primary pipe of the drainpipe and the second end defines an outlet from the conduit into a secondary pipe of the drainpipe, the filter being configured to inhibit the solid debris from passing into the secondary pipe of the drainpipe through the outlet.