A spring gutter strainer for preventing leaves and debris from clogging the downsput of a gutter, comprising a single helical coil of thick-gauged wire having a bulbous head designed to trap leaves and debris and a flexible neck which is inserted within the downsput so as to ensure the spring gutter strainer will stay in place regardless of the weather conditions. In the preferred embodiment, the diameter of the neck portion is either 2 or 3 inches, although larger and smaller sizes may be produced to accommodate downsputs of any size. The diameter of the head is typically at least an inch greater than that of the neck so as to prevent the strainer from sliding down the downsput and to more effectively trap leaves and debris.
SPRING GUTTER STRAINER

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates generally to a gutter strainer, and more particularly, to a spring gutter strainer designed to prevent clogging of gutter downspouts and pipes, and even more particularly to a spring gutter strainer composed of a single coil of thick wire having a flexible neck to ensure the strainer stays in place and a bulbous head designed to trap leaves and debris.

[0003] 2. Description of the Prior Art

[0004] Gutter strainers, also known as downspout strainers, have long been used to keep leaves and debris from being washed into gutter downspouts or pipes, where they create clogs either over the outlet opening or in the elbows or bends of the downspout. These devices keep gutters draining longer between routine cleanings, and are of vital importance when the downspouts are connected to an underground drainage system, since such systems are difficult and expensive to unlog once debris from the gutters are deposited and collected therein.

[0005] Devices for preventing clogs and accumulation of debris in downspouts or water pipes have been in use for over 100 years. For example, U.S. Pat. No. 550,032, which issued to Tucker on Nov. 19, 1895 for “Roof Leader” discloses a roof water leader pipe having a ventilating tube suspended by a strainer cage seated at the entrance of the leader and a flexible tubular section connecting the tube to a sewer. An example of a downspout strainer is shown in U.S. Pat. No. 725,933, which issued to Coleman on Apr. 21, 1903 for “Adjustable Strainer for Down Spouts” and which discloses a strainer that adjusts itself to the interior shape of a downspout and securely clamps itself within the spout comprising a plurality of curved spring arms.

[0006] Of more recent vintage is U.S. Pat. No. 2,640,593, which issued to Korb on Jun. 2, 1953 for “Down Spout Strainer” discloses a strainer comprising a plurality of wires bent intermediate their lengths adapted to be inserted into drain tubes to restrict leaves and debris from entering the tubes and clogging same. A similar device is disclosed in U.S. Pat. No. 3,121,684, which issued to Bugbird on Feb. 18, 1964 for “Gutter and Downspout Strainer” which teaches a strainer in the form of a hollow cage comprising an upper bulbous portion, a lower tapering pilot portion and a weight attached thereto to facilitate the positioning of the strainer in the downspout.

[0007] Improvements are constantly being made to the downspout strainers, many including moving mechanical parts used to dislodge particles or clean the strainer. For example, U.S. Pat. No. 5,802,775, which issued to Toth on Sep. 8, 1998 for “Active gutter downspout strainer with rotating action” discloses a flexible cage attached to a base which fits in to a gutter downspout opening, the construction of the cage being a hub and spoke system, wherein the round spokes are attached to a central hub, the base is fixed and rests in the drain opening, and the legs of the cage to attached to the base. Another example is shown in U.S. Pat. No. 4,683,685, which issued to Ebeling et al. on Aug. 4, 1987 for “Draining arrangement for roof” and which teaches a draining arrangement comprising an opening of a vertical water pipe situated directly at the surface of a roof and covered by a lid element which is lid situated at a height over the roof that a certain predefined amount of water can flow under the lid where the water stream while on its way to the opening of the vertical draining pipe and without changing its direction, continuously changes to closed flow simultaneously as the air entrance becomes closed. And still another example of a downspout strainer having additional mechanical components is shown in U.S. Pat. No. 4,837,507, which issued to Fender on Jun. 13, 1989 for “Rain water receiving apparatus with dumping feature” and which discloses a gutter apparatus for directing rain water to a downspout including a rod that defines a rotational axis which is supported by a plurality of fixed supporting brackets to extend along a lower edge of the roof and a plurality of supports fixed to the rod mount the gutter trough to the rod so that gutter trough may be rotated from an upright operational position to an inverted dumping position.

[0008] Devices similar in design to downspout strainers have been used in a myriad of different applications, from catalytic reactor tubes, as shown in U.S. Pat. No. 3,034,869, which issued to Petersen on May 15, 1962 for “Catalyst Retainer” and which discloses a catalytic reactor tube and compressible helical spring for retaining solids in reactor tubes while permitting a continuous flow of fluid through the tubes, to a toilet-based diaper washer, as shown in U.S. Pat. No. 3,021,528, which issued to Harrgrave on Feb. 20, 1962 for “Diaper Washer” and which discloses a washer adapted for use in a toilet wherein soiled articles, such as diapers, may be washed in the bowl and rinsed by the flushing action of the water discharged through the bowl, comprising a spiral-shaped wire strainer.

[0009] As shall be appreciated, the prior art fails to specifically address either the problem or the solution arrived upon by applicant.

SUMMARY OF THE INVENTION

[0010] Against the foregoing background, it is a primary object of the present invention to provide a spring gutter strainer.

[0011] It is another object of the present invention to provide such a spring gutter strainer that is relatively simple to manufacture.

[0012] It is yet another object of the present invention to provide such a spring gutter strainer that is relatively inexpensive to produce and manufacture.

[0013] It is another object of the present invention to provide such a spring gutter strainer that is simple to use.

[0014] It is still another object of the present invention to provide such a spring gutter strainer that is reliable because it is composed out of a single piece of thick-gauged wire.

[0015] It is another object of the present invention to provide such a spring gutter strainer that keep gutters and downspouts draining longer between routine cleanings.

[0016] It is yet another object of the present invention to provide such a spring gutter strainer that prevents clogging in downspouts connected to underground drainage systems.

[0017] It is but another object of the present invention to provide such a spring gutter strainer that is heavy and will therefore stay in place in a downspout or gutter.
It is yet another object of the present invention to provide such a spring gutter strainer that includes a longer neck to ensure the strainer will stay in the downspout even when the gutters are being cleaned, such as by a leaf blower or other device.

It is still another object of the present invention to provide such a spring gutter strainer that includes a head that is taller and wider than any other available devices, thereby blocking and trapping larger objects and keeping gutters flowing longer.

It is another object of the present invention to provide such a spring gutter strainer that may be used in connection with any type of gutters, including aluminum, galvanized steel, and copper.

It is yet another object of the present invention to provide such a spring gutter strainer that will not damage the gutter.

It is but another object of the present invention to provide such a spring gutter strainer that is sturdy and will last for years.

It is yet another object of the present invention to provide such a spring gutter strainer that will not rust or oxidize.

To the accomplishments of the foregoing objects and advantages, the present invention, in brief summary, comprises a spring gutter strainer use in gutters or downspouts comprising a single helical coil of thick-gauged wire having a bulbous head designed to trap leaves and debris and a flexible neck which is inserted within the downspout so as to ensure the spring gutter strainer will stay in place regardless of the weather conditions. In the preferred embodiment, the diameter of the neck portion is either 2 or 3 inches, although larger and smaller sizes may be produced to accommodate downspouts of any size. The diameter of the head is typically at least an inch greater than that of the neck so as to prevent the strainer from sliding down the downspout and to more effectively trap leaves and debris.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and still other objects and advantages of the present invention will be more apparent from the detailed explanation of the preferred embodiments of the invention in connection with the accompanying drawings, wherein:

FIG. 1 is a perspective illustration of the spring gutter strainer of the present invention;

FIG. 2 is a front elevational view of the spring gutter strainer of FIG. 1;

FIG. 3 is a top plan view of the spring gutter strainer of FIG. 1.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings and, in particular, to FIG. 1 thereof, the spring gutter strainer of the present invention is provided and is referred to generally by reference numeral 10. The spring gutter strainer 10 comprises a single helical wire coil 12. The composition of the wire coil 12 depends in large part on the application of the spring gutter strainer 10. For example, if the strainer 10 is to be used in an aluminum or galvanized steel gutter, the gutter strainer 10 should be composed of galvanized steel wire. If, however, the gutter strainer 10 is to be used in other types of gutters, including copper gutters, stainless steel wire is the preferred material component for the spring gutter strainer 10.

In the preferred embodiment, the diameter of the wire used for the coil 12 is approximately ½ inch, which contributes to the structural integrity of the spring gutter strainer 10 as well as to the weight thereof, which weight assists in the secure placement of the gutter strainer 10 within the downspout. Of course, other diameter wire is also contemplated, although compromises may be made to the strength of the gutter strainer 10 or to the flexibility, weight and machinability thereof. The tightness of the coils (i.e., the distance between respective turns of the coil) may also be varied so as to accommodate different types of debris. The coils should not be so tight so as to prevent the free flow of water or fluid therethrough, but should not be so loose as to be incapable of trapping leaves and other debris.

Regardless of the material used for the wire coil 12, the spring gutter strainer 10 comprises two separate elements, a bulbous head 14 and a flexible neck 16. The head 14 is distinguished from the neck 16 by the differences in the diameters of the respective elements, the head diameter, referred to by the reference numeral 18, being larger than the neck diameter 20.

For the spring gutter strainer 10 to function, the neck diameter 20 must be the same as or slightly less than the diameter of the gutter or downspout within which the strainer 10 is to be inserted, and the head diameter 18 must be greater than the diameter of the gutter or downspout so as to prevent the spring gutter strainer 10 from sliding completely within the downspout or gutter. In practical application, the preferred neck diameter is either 2 or 3 inches, since most gutters are of these diameters. However, larger and smaller neck diameters 20 are contemplated, including one inch or four inches or more, depending upon the gutter size. Other diameters, such as 1½ inches are also contemplated.

It should be noted that although the neck 16 is shown as being generally cylindrical and having a uniform diameter throughout, other shapes are contemplated and may, in fact, be more appropriate for certain applications. For example, a tapered neck 16 may allow for easier insertion of the spring gutter strainer 10 within the downspout. Alternatively, a flare may be provided to the neck 16 so as to prevent the accidental dislodgement of the spring gutter strainer 10 from the downspout. Furthermore, while in the preferred embodiment the neck 16 is somewhat flexible so as to facilitate the insertion of the gutter strainer 10 within the downspout, the flexibility will depend in large part on the material component of the gutter strainer 10 and the tightness of the wire coil 12. A more flexible or a stiffer gutter strainer 10 may be desired in certain applications.

The shape of the head 14 is also variable, although in the preferred embodiment it is generally spherical. It should be appreciated that the head diameter 18 is measured from the widest portion of the head 14. In the preferred embodiment, the head diameter 18 is at least an inch greater than the neck diameter 20, and has already been mentioned, larger than the diameter of the downspout. For example, for
the 2 inch diameter neck 16, it has been observed that the ideal diameter of the head 14 is approximately 3/8 inches. Obviously larger and smaller diameters would also function, although if the head 14 is too large it may not fit within the gutter or be aesthetically unappealing, and if the head 14 is too small, it will not adequately or sufficiently trap leaves or other debris. Furthermore, while the generally spherical shape is preferred due to the ease of manufacture and application, other shapes are also contemplated, such as a simple cylindrical, conical, tapered or otherwise.

[0035] The height of the gutter strainer 10, referred to by reference number 22 depends in large part on the head and neck diameters 18, 20. For example, for a strainer 10 having a neck diameter 20 of 1/2 to 2 inches, the gutter strainer height 22 may be approximately 6 inches, roughly half of which is taken up by the neck 16 and the other half taken up by the head 14. For a strainer 10 having a neck diameter 20 of 2 1/2 to 3 inches, the gutter height 22 would be approximately 7 inches, again with roughly half taken up by the neck 16 and the other half taken up by the head 14. A neck height 24 of less than approximately 3 inches is less desirable, since the longer neck height 24 allows for the secure retention of the gutter strainer 10 within the downspout. Furthermore, a head height 26 of more than 4 or 5 inches may be less desirable, since the gutter strainer 10 would rise significantly above the top of the gutter and thus present a less aesthetically pleasing appearance.

[0036] Having thus described the invention with particular reference to the preferred forms thereof, it will be obvious that various changes and modifications can be made therein without departing from the spirit and scope of the present invention as defined by the appended claims.

Wherefore, I claim:

1. A spring gutter strainer for insertion within the downspout of a gutter for preventing leaves and debris from entering the downspout, said spring gutter strainer comprising a single continuous helical coil having an upper head portion and a lower neck portion, wherein said lower neck portion is roughly cylindrical in shape and of a diameter less than the diameter of said downspout, and wherein said upper head portion is roughly cylindrical in shape and of a diameter greater than the diameter of said downspout.

2. The spring gutter strainer of claim 1, wherein said neck portion is tapered.

3. The spring gutter strainer of claim 1, wherein said helical coil comprises 1/8 inch diameter galvanized steel wire.

4. The spring gutter strainer of claim 1, wherein said helical coil comprises 1/4 inch diameter stainless steel wire.

5. The spring gutter strainer of claim 1, wherein the diameter of said neck portion is between one and four inches.

6. The spring gutter strainer of claim 5, wherein the diameter of said head portion is at least one inch greater than said neck portion.

7. A spring gutter strainer for insertion within the downspout of a gutter for preventing leaves and debris from entering the downspout, said spring gutter strainer comprising a single continuous 1/8 inch diameter helical coil wire having an upper head portion and a lower neck portion, wherein said lower neck portion is roughly cylindrical having a taper thereto in shape and of a diameter of approximately 2 inches, and wherein said upper head portion is roughly cylindrical in shape and of a diameter of approximately 3/8 inches.

8. The spring gutter strainer of claim 7, wherein said helical coil comprises galvanized steel wire.

9. The spring gutter strainer of claim 7, wherein said helical coil comprises stainless steel wire.

10. A method for preventing leaves and debris from blocking or clogging the downspout of a gutter, wherein said downspout is approximately 2 inches in diameter, said method comprising the steps of:

    providing a spring gutter strainer comprising a single continuous 1/8 inch diameter helical coil wire having an upper head portion and a lower neck portion, wherein said lower neck portion is roughly cylindrical having a taper thereto in shape and of a diameter of approximately 2 inches, and wherein said upper head portion is roughly cylindrical in shape and of a diameter of approximately 3/8 inches;

    inserting said neck portion within said downspout and securing it therein; and

    periodically cleaning the accumulation of leaves and debris from said spring gutter strainer.

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