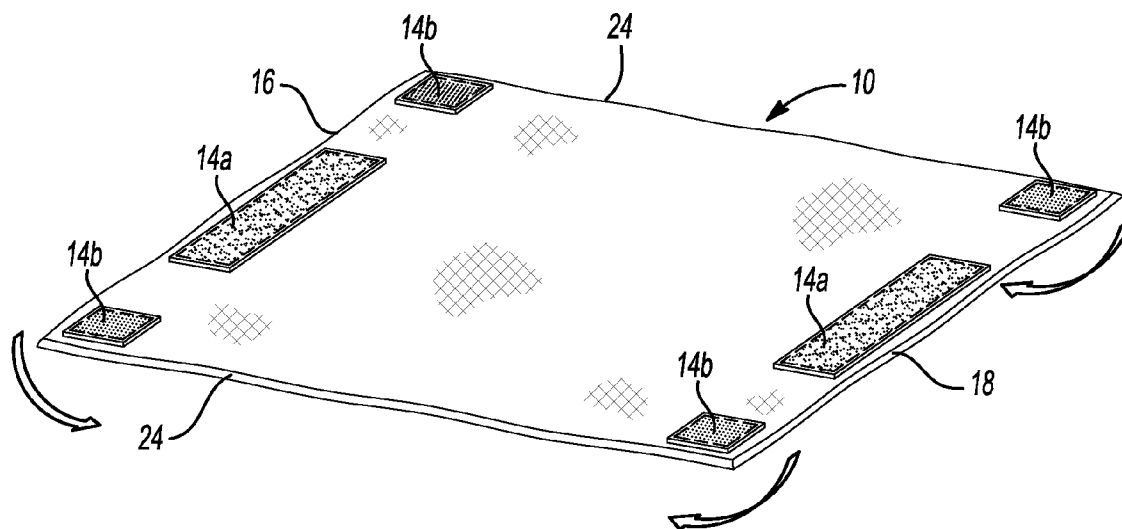




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D'Andreta et al.(10) **Pub. No.: US 2014/0048465 A1**(43) **Pub. Date: Feb. 20, 2014**(54) **ENVIRONMENTAL BARRIER DEVICE FOR A
STORM GRATE****Publication Classification**(71) Applicant: **M&D Environmental Barriers, LLP,**
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Sterling Heights, MI (US)(21) Appl. No.: **13/965,598**(22) Filed: **Aug. 13, 2013****Related U.S. Application Data**(60) Provisional application No. 61/682,978, filed on Aug.
14, 2012.(51) **Int. Cl.**
E03F 5/06 (2006.01)(52) **U.S. Cl.**
CPC **E03F 5/06** (2013.01)
USPC **210/163; 29/505**(57) **ABSTRACT**

An environmental barrier device for use with a storm grate includes a substantially rectangular filter member a first fastening portion, a second fastening portion, a third fastening portion, a fourth fastening portion, a fifth fastening portion, and a sixth fastening portion. The first fastening portion is selectively secured to the third fastening portion and the fourth fastening portion. The second fastening portion is selectively secured to the fifth fastening portion and the sixth fastening portion. The first edge, the second edge, the third edge and the fourth edge define an opening therebetween.



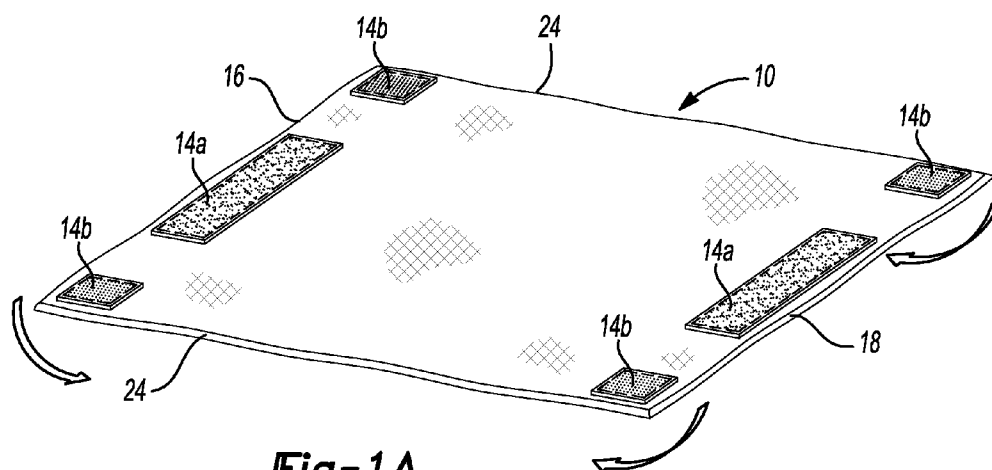


Fig-1A

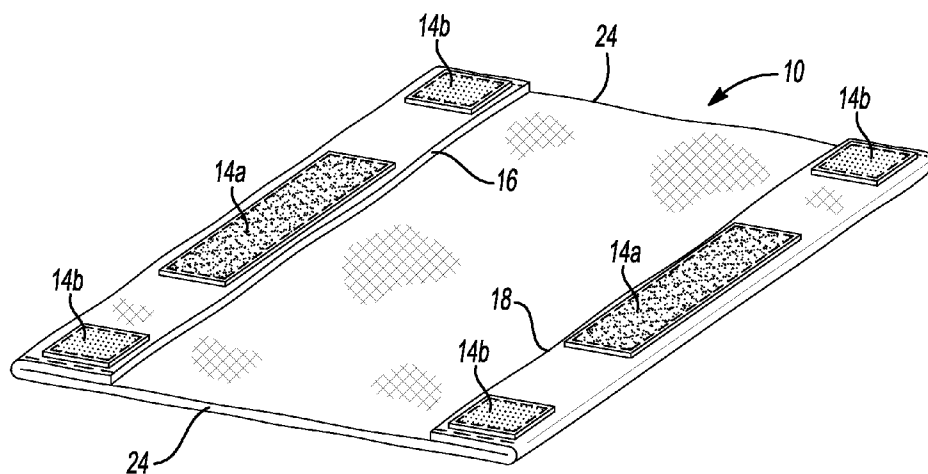


Fig-1B

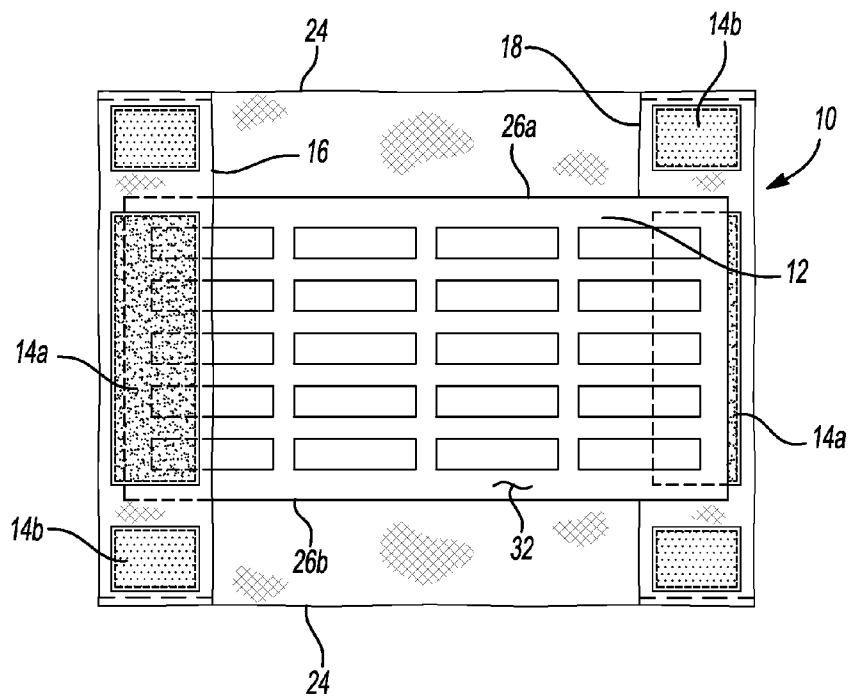


Fig-2

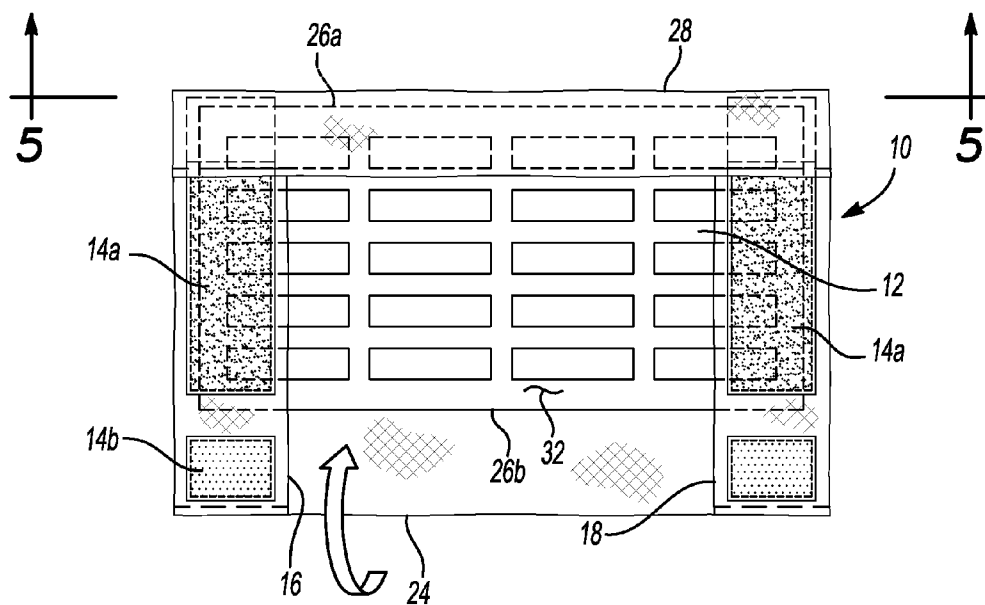
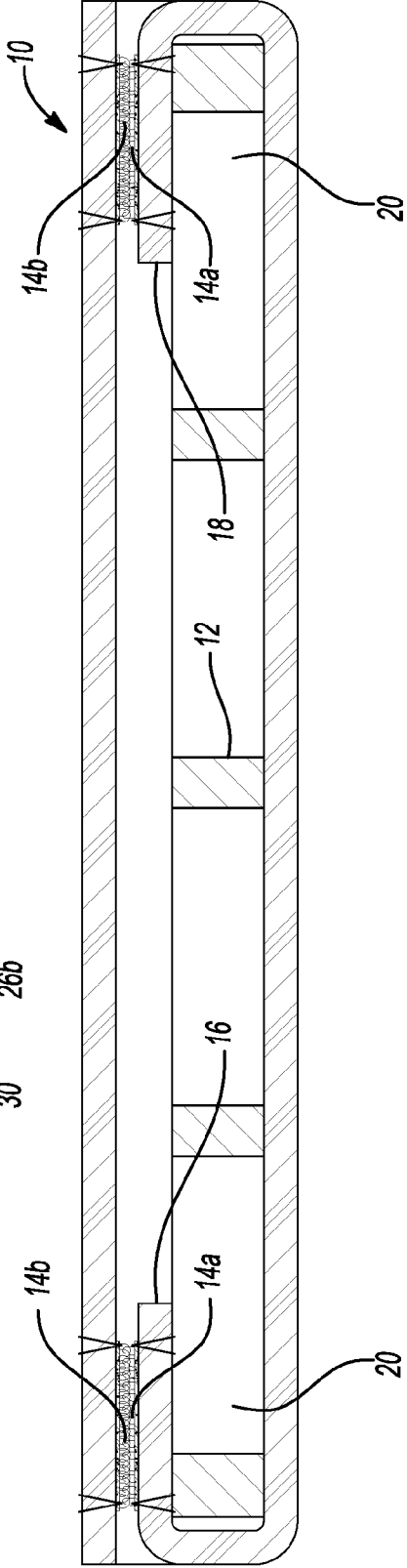
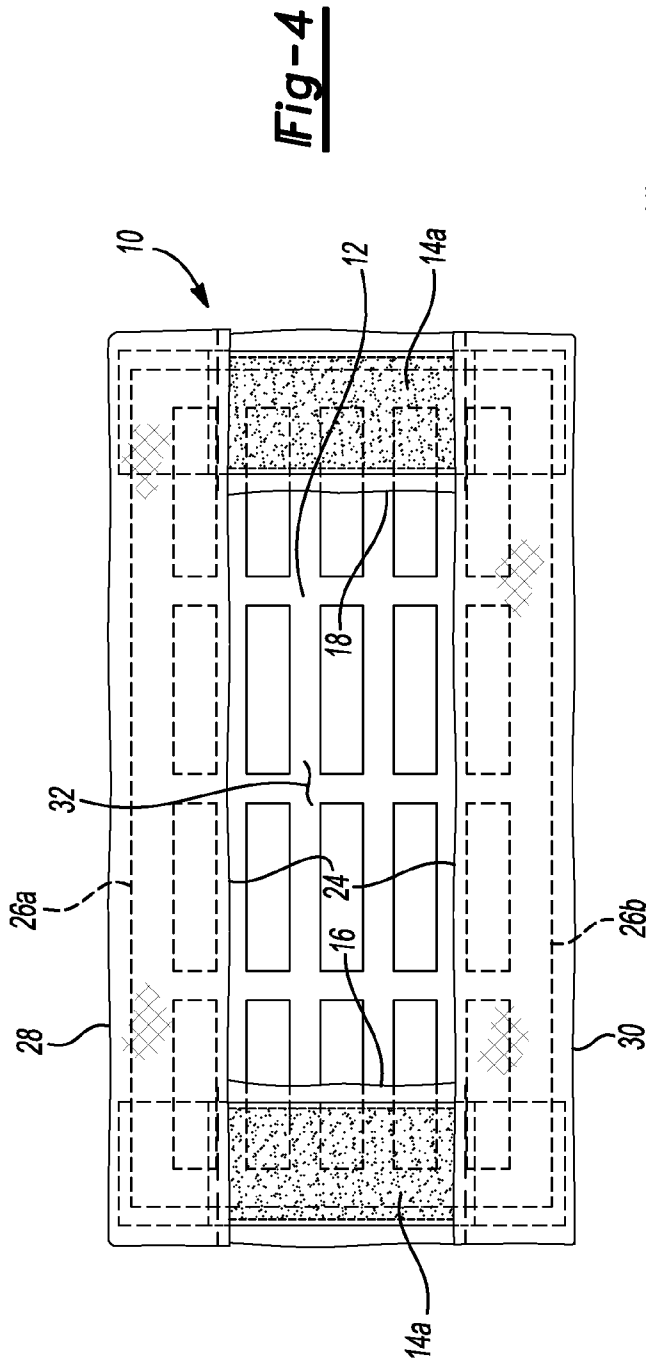


Fig-3



ENVIRONMENTAL BARRIER DEVICE FOR A STORM GRATE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to U.S. Provisional Patent Application No. 61/682,978 filed 14 Aug. 2012, which application is herein expressly incorporated by reference.

TECHNICAL FIELD

[0002] The present teachings generally relate to environmental barrier devices. More particularly, the present teachings relate to an environmental barrier device for filtering water that passes through a storm grate of soil, sediment and debris.

INTRODUCTION

[0003] This section provides background information related to the present disclosure which is not necessarily prior art.

[0004] Exposed soil areas are subject to water erosion and sediment movement during and after storm water events. Materials and methods are required to eliminate soil loss or movement across construction sites from such events. A silt fence may be used as a temporary barrier used to intercept sediment-laden runoff from small areas. Silt fences are effective in trapping sediment from all activities that involve soil disturbance. They can be used on adjacent properties, adjacent bodies of water, large sloping areas, near streams and waterways, near surface drainage ways and other areas to prevent water erosion and sediment movement.

[0005] A conventional silt fence includes a fabric portion and a plurality of stakes. The fabric portion extends between the stakes. The stakes serve to anchor and support the fabric portion. The fabric functions to prevent unwanted erosion and sediment movement while permitting the passage of rainwater.

[0006] It is also known to protect a storm sewer from soil, sediment and debris by filtering the water that normally passes through a storm grate. One such example for filtering water passing through a storm grate is shown and described in U.S. Pat. No. 6,010,622. In this example, an envelope is provided for completely surrounding (i.e., enveloping) a storm grate. The envelope necessarily includes an upper layer of filtering material and a lower layer of filtering material.

[0007] While conventional environmental barrier devices have proven to be satisfactory for their intended, they are all associated with drawbacks and limitations. Accordingly, a continuous need for improvement remains in the relevant art.

SUMMARY

[0008] This section provides a general summary of the disclosure, and is not a comprehensive disclosure of its full scope or all of its features.

[0009] According to one particular aspect, the present disclosure provides an environmental barrier device for use with a storm grate. The environmental barrier device includes a substantially rectangular filter member a first fastening portion, a second fastening portion, a third fastening portion, a fourth fastening portion, a fifth fastening portion, and a sixth fastening portion. The first fastening portion is disposed adjacent to a first edge of the filter member. The second fastening portion is disposed adjacent to a second edge of the filter

member. The third fastening portion is disposed adjacent to a first corner of the filter member. The fourth fastening portion is disposed adjacent to a second corner of the filter member. The fifth fastening portion is disposed adjacent to a third corner of the filter member. The sixth fastening portion is disposed adjacent to a fourth corner of the filter member. The first fastening portion is selectively secured to the third fastening portion and the fourth fastening portion. The second fastening portion is selectively secured to the fifth fastening portion and the sixth fastening portion. The first edge, the second edge, the third edge and the fourth edge define an opening therebetween.

[0010] According to another particular aspect, the present disclosure provides an environmental barrier device for use with a storm grate. The environmental barrier device includes a filter member. A first side of the filter member includes a first edge having a first fastening portion and a second fastening portion, and a second edge having a third fastening portion and a fourth fastening portion. The first edge defines a first fold in the filter member. The second edge defines a second fold in the filter member. The first fastening portion is secured to the second fastening portion, and the third fastening portion is secured to the fourth fastening portion.

[0011] According to yet another particular aspect, the present disclosure provides a method for covering a storm grate. The method includes folding a first edge of a filter member in a first direction. The first edge includes a first fastening portion and a second fastening portion. The method also includes folding a second edge of the filter member in a second direction parallel to the first direction. The second edge includes a third fastening portion and a fourth fastening portion. The method further includes folding a third edge of the filter member in a third direction perpendicular to the first direction and securing the first fastening portion to the second fastening portion. In addition, the method includes folding a fourth edge of the filter member in a fourth direction parallel to the third direction and securing the third fastening portion to the fourth fastening portion. The first edge, the second edge, the third edge and the fourth edge substantially define an opening therebetween.

[0012] Further areas of applicability will become apparent from the description provided herein. The description and specific examples in this summary are intended for purposes of illustration only and are not intended to limit the scope of the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] The drawings described herein are for illustrative purposes only of selected embodiments and not all possible implementations, and are not intended to limit the scope of the present disclosure.

[0014] FIG. 1A is a perspective view showing the top of an environmental barrier device for a storm grate in a first configuration in accordance with the present teachings;

[0015] FIG. 1B is a perspective view showing the bottom of the environmental barrier device for a storm grate of FIG. 1A in a second configuration;

[0016] FIG. 2 is a bottom view of the environmental barrier device for a storm grate of FIG. 1A in a third configuration;

[0017] FIG. 3 is a bottom view of the environmental barrier device for a storm grate of FIG. 1A in a fourth configuration;

[0018] FIG. 4 is a bottom view of the environmental barrier device for a storm grate of FIG. 1A in a fifth configuration; and

[0019] FIG. 5 is a cross-sectional view of the environmental barrier device for a storm grate of FIG. 1A, taken through line 5-5 of FIG. 3.

DESCRIPTION OF VARIOUS ASPECTS

[0020] Example embodiments will now be described more fully with reference to the accompanying drawings.

[0021] Example embodiments are provided so that this disclosure will be thorough, and will fully convey the scope to those who are skilled in the art. Numerous specific details are set forth such as examples of specific components, devices, and methods, to provide a thorough understanding of embodiments of the present disclosure. It will be apparent to those skilled in the art that specific details need not be employed, that example embodiments may be embodied in many different forms and that neither should be construed to limit the scope of the disclosure. In some example embodiments, well-known processes, well-known device structures, and well-known technologies are not described in detail.

[0022] The terminology used herein is for the purpose of describing particular example embodiments only and is not intended to be limiting. As used herein, the singular forms “a,” “an,” and “the” may be intended to include the plural forms as well, unless the context clearly indicates otherwise. The terms “comprises,” “comprising,” “including,” and “having,” are inclusive and therefore specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof. The method steps, processes, and operations described herein are not to be construed as necessarily requiring their performance in the particular order discussed or illustrated, unless specifically identified as an order of performance. It is also to be understood that additional or alternative steps may be employed.

[0023] When an element or layer is referred to as being “on,” “engaged to,” “connected to,” or “coupled to” another element or layer, it may be directly on, engaged, connected or coupled to the other element or layer, or intervening elements or layers may be present. In contrast, when an element is referred to as being “directly on,” “directly engaged to,” “directly connected to,” or “directly coupled to” another element or layer, there may be no intervening elements or layers present. Other words used to describe the relationship between elements should be interpreted in a like fashion (e.g., “between” versus “directly between,” “adjacent” versus “directly adjacent,” etc.). As used herein, the term “and/or” includes any and all combinations of one or more of the associated listed items.

[0024] Although the terms first, second, third, etc. may be used herein to describe various elements, components, regions, layers and/or sections, these elements, components, regions, layers and/or sections should not be limited by these terms. These terms may be only used to distinguish one element, component, region, layer or section from another region, layer or section. Terms such as “first,” “second,” and other numerical terms when used herein do not imply a sequence or order unless clearly indicated by the context. Thus, a first element, component, region, layer or section discussed below could be termed a second element, component, region, layer or section without departing from the teachings of the example embodiments.

[0025] Spatially relative terms, such as “inner,” “outer,” “beneath,” “below,” “lower,” “above,” “upper,” and the like,

may be used herein for ease of description to describe one element or feature’s relationship to another element(s) or feature(s) as illustrated in the figures. Spatially relative terms may be intended to encompass different orientations of the device in use or operation in addition to the orientation depicted in the figures. For example, if the device in the figures is turned over, elements described as “below” or “beneath” other elements or features would then be oriented “above” the other elements or features. Thus, the example term “below” can encompass both an orientation of above and below. The device may be otherwise oriented (rotated 90 degrees or at other orientations) and the spatially relative descriptors used herein interpreted accordingly.

[0026] With general reference to the drawings, an environmental barrier device **10** for a storm grate **12** in accordance with the present teachings is illustrated. As will be described below, the environmental barrier device **10** utilizes a design that functions to capture the lateral edges or sides of the storm grate **12**, thereby not requiring material to cover both the top and the bottom of the storm grate **12**.

[0027] In certain of the drawings, the environmental barrier device **10** is shown operatively associated with a storm grate **12**. It will be appreciated that the storm grate **12** is conventional in construction insofar as the present invention is concerned. In this regard, the present teachings may be utilized with any storm grate **12** within the scope of the present invention.

[0028] The environmental barrier device **10** may be constructed of any material suitable for filtering soil, sediment and other debris from run-off water. For example, material commonly used to construct silt fences may be utilized. The environmental barrier device **10** may also include fastening portions for securing the material to itself and thereby retaining the environmental barrier device **10** to the storm grate **12**. In one application, the fastening portions may be comprised of hook and loop material commonly sold under the trademark Velcro®.

[0029] The fabric for the environmental barrier device **10** is generally planar and rectangular in shape. As generally shown in FIGS. 1A-1B, the fabric can be folded over at a top edge **16** and a bottom edge **18**. These folds may be maintained by stitching the fabric to itself or otherwise suitably securing the fabric to itself.

[0030] A height of the storm grate **12** may be approximately equal to the distance between the top edge **16** and the bottom edge **18**. The storm grate **12** may be placed upon the environmental barrier device **10** with upper and lower edges of the storm grate **12** disposed in pockets **20** defined by the folded over portions of the fabric (FIG. 5).

[0031] First fastening portions **14a**, such as Velcro material, may be secured to a first side of the fabric adjacent to the top and bottom edges **16**, **18** in any well-known manner such as stitching. Similarly, second fastening portions **14b** may be positioned on the first side of the fabric at the corners thereof. In the embodiment illustrated, a looped portion of Velcro material extends across a portion of the fabric adjacent to the top and bottom edges **16**, **18** while a cooperating hooked portion of Velcro material is positioned at each of the four corners. Alternatively, a hooked portion of Velcro material may extend across the portion of the fabric adjacent to the top and bottom edges **16**, **18** while a cooperating looped portion of Velcro material may be positioned at each of the four corners.

[0032] Lateral sides **24** of the fabric may be folded in toward the center of the environmental barrier device **10** such that first and second lateral sides **26a**, **26b** of the storm grate **12** are positioned adjacent a first and a second fold **28**, **30**, respectively (as shown in the drawings). Approximately two or three inches of fabric may overlap a rear surface **32** of the storm grate **12**, such that the lateral sides **24** and the top and bottom edges **16**, **18** define an opening therebetween, and the rear side or surface **32** of the storm grate **12** otherwise remains open and exposed.

[0033] The second fastening portions **14b** at the corners of the material are then secured to the cooperating first fastening portions **14a** at the top and bottom edges **16**, **18** such that the first and second fastening portions **14a**, **14b** overlap. In this manner, the environmental barrier device **10** is secured to itself and the environmental barrier device **10** is retained to the storm grate **12**.

[0034] The foregoing description has been provided for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention. Individual elements or features of any particular embodiment are generally not limited to that particular embodiment, but, where applicable, are interchangeable and can be used in a selected embodiment, even if not specifically shown or described. The same may also be varied in many ways. Such variations are not to be regarded as a departure from the invention, and all such modifications are intended to be included within the scope of the invention.

What is claimed is:

1. An environmental barrier device for a storm grate, the environmental barrier device comprising:
 - a substantially rectangular filter member;
 - a first fastening portion disposed adjacent to a first edge of the filter member; and
 - a second fastening portion disposed adjacent to a second edge of the filter member;
 - a third fastening portion disposed adjacent to a first corner of the filter member;
 - a fourth fastening portion disposed adjacent to a second corner of the filter member;
 - a fifth fastening portion disposed adjacent to a third corner of the filter member; and
 - a sixth fastening portion disposed adjacent to a fourth corner of the filter member;
 wherein the first fastening portion is selectively secured to the third fastening portion and the fourth fastening portion, the second fastening portion is selectively secured to the fifth fastening portion and the sixth fastening portion, and the first edge, the second edge, the third edge and the fourth edge define an opening therebetween.
2. The environmental barrier device of claim 1, in combination with the storm grate.
3. The environmental barrier device of claim 2, wherein a first side of the storm grate is completely covered by the environmental barrier device and a second side of the storm grate is open.
4. An environmental barrier device for a storm grate, the environmental barrier device comprising:
 - a filter member, a first side of the filter member including a first edge having a first fastening portion and a second fastening portion; and

a second edge having a third fastening portion and a fourth fastening portion;

wherein the first edge defines a first fold in the filter member, the second edge defines a second fold in the filter member, and wherein the first fastening portion is secured to the second fastening portion, and the third fastening portion is secured to the fourth fastening portion.

5. The environmental barrier device of claim 4, wherein a first side of the storm grate and a portion of a second side of the storm grate are disposed on a second side of the filter member.

6. The environmental barrier device of claim 4, wherein the first edge further includes a fifth fastening portion secured to the second fastening portion, and the second edge further includes a sixth fastening portion secured to the fourth fastening portion.

7. The environmental barrier device of claim 4, wherein the first, second, third and fourth fastening portions are hook and loop fastening portions.

8. The environmental barrier device of claim 4, in combination with the storm grate.

9. The environmental barrier device of claim 8, wherein a first side of the storm grate is completely covered by the filter member and a second side of the storm grate is open.

10. A method for covering a storm grate, the method comprising:

- providing a filter member;
- folding a first edge of the filter member in a first direction, the first edge including a first fastening portion and a second fastening portion;
- folding a second edge of the filter member in a second direction parallel to the first direction, the second edge including a third fastening portion and a fourth fastening portion;
- folding a third edge of the filter member in a third direction perpendicular to the first direction such that the first fastening portion is secured to the second fastening portion; and
- folding a fourth edge of the filter member in a fourth direction parallel to the third direction such that the third fastening portion is secured to the fourth fastening portion, wherein the first edge, the second edge, the third edge and the fourth edge substantially define an opening therebetween.

11. The method of claim 10, further comprising covering a first side of a storm grate with the filter member.

12. The method of claim 10, wherein the first edge includes a fifth fastening portion and the second edge includes a sixth fastening portion, and folding the third edge includes securing the fifth fastening portion to the second fastening portion and folding the fourth edge includes securing the sixth fastening portion to the fourth fastening portion.

13. The method of claim 11, wherein covering the first side of the storm grate includes completely covering the first of the storm grate.

14. The method of claim 13, further comprising having a second side of the storm grate substantially uncovered by the filter member.

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