



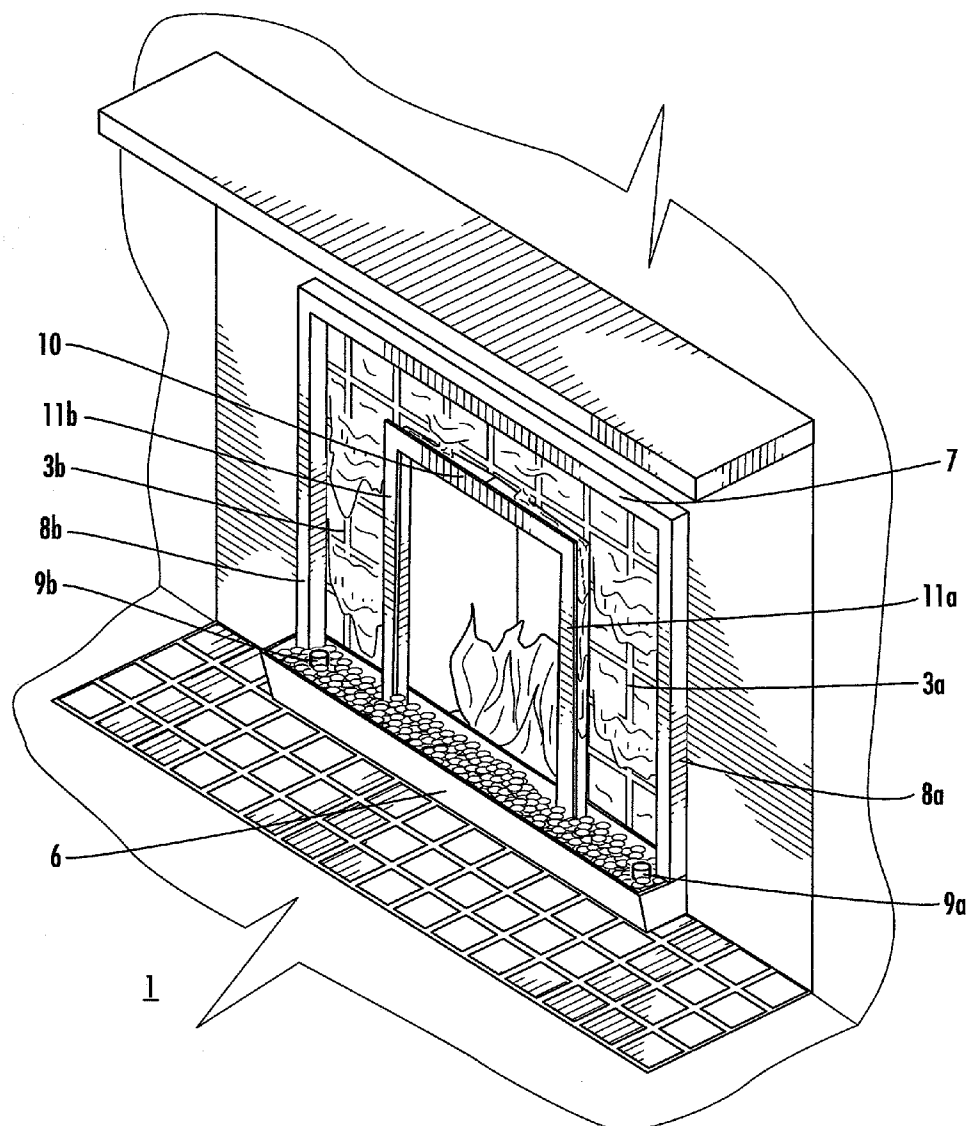
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(19) **United States**(12) **Patent Application Publication**
Kline(10) **Pub. No.: US 2009/0178667 A1**(43) **Pub. Date: Jul. 16, 2009**(54) **FIREPLACE FOUNTAIN APPARATUS****Publication Classification**(76) Inventor: **Brandon David Kline**, Dallas, TX
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F24B 1/191 (2006.01)
(52) **U.S. Cl.** **126/500**(57) **ABSTRACT**

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A fireplace fountain apparatus for a fireplace structure with an aperture for a firebox comprises a distribution pipe superior to the aperture, a reservoir at the base of the fireplace structure, and a pump communicating water from the reservoir through the lateral pipe to the distribution pipe and onto the surface of the fireplace structure. Water flowing down the structure is diverted lateral of the aperture by a diversion trough disposed superior to the aperture and into the reservoir. The diversion trough may be removed and an insert may be fitted to the aperture when the use of the firebox is not contemplated.

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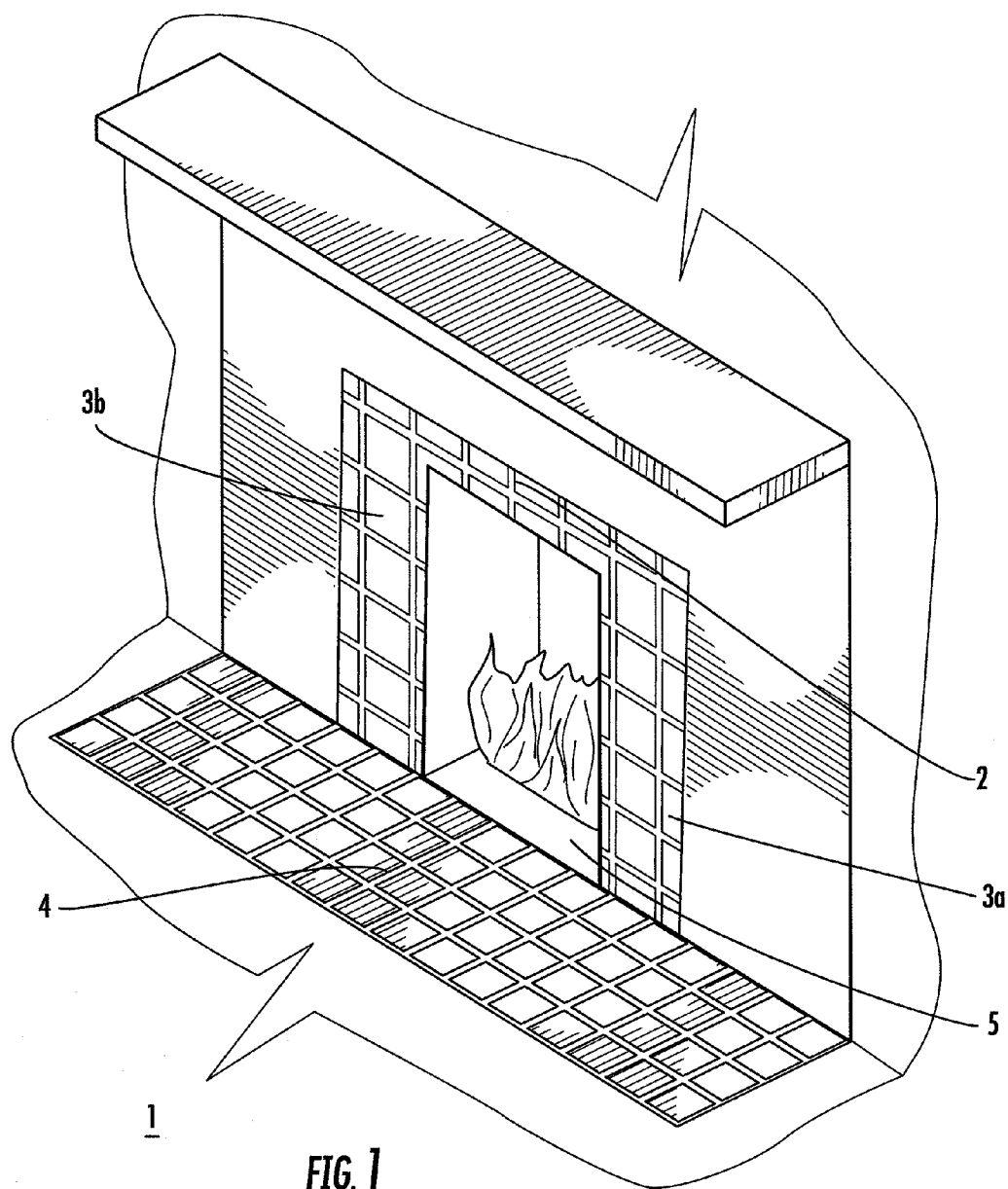
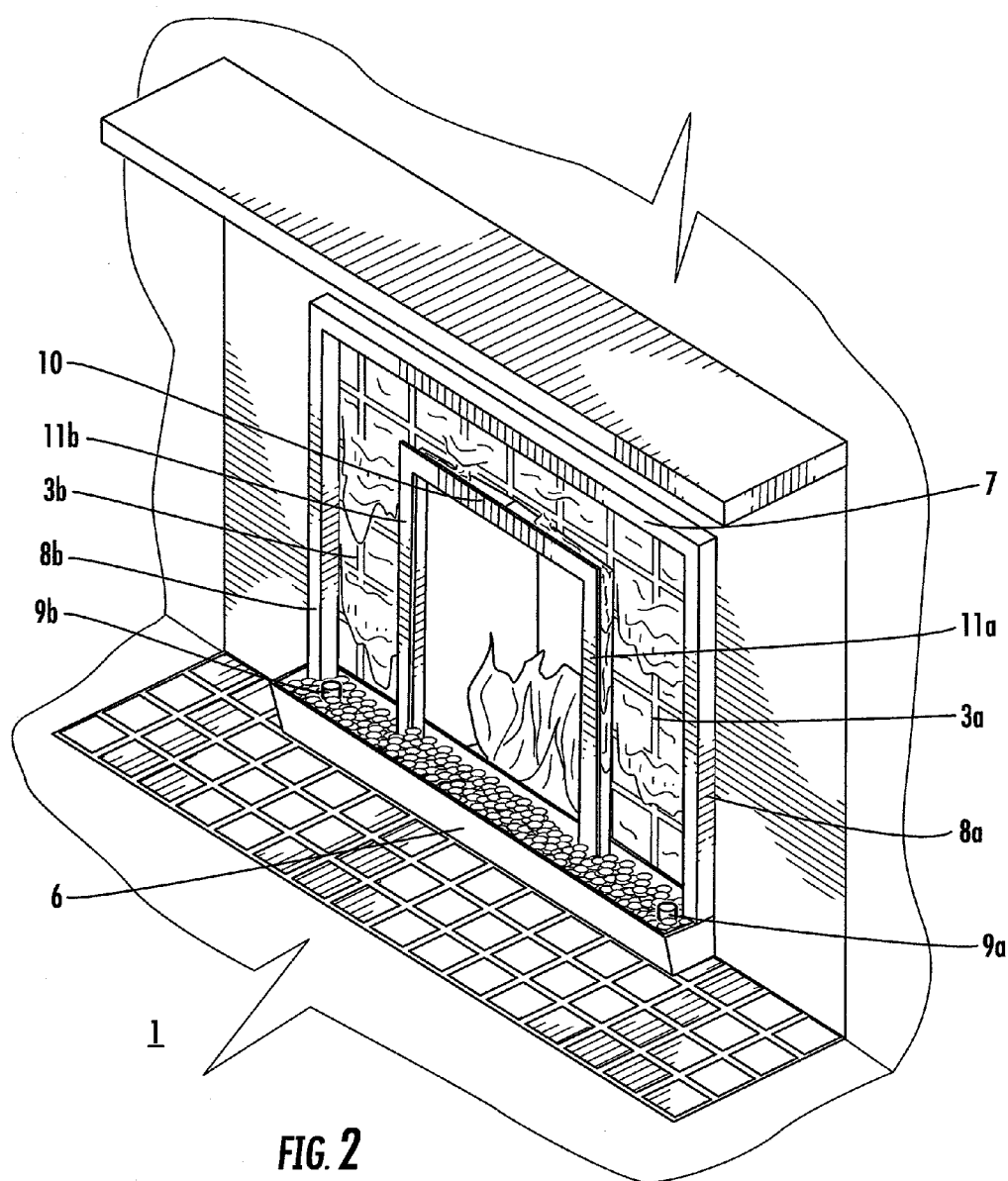
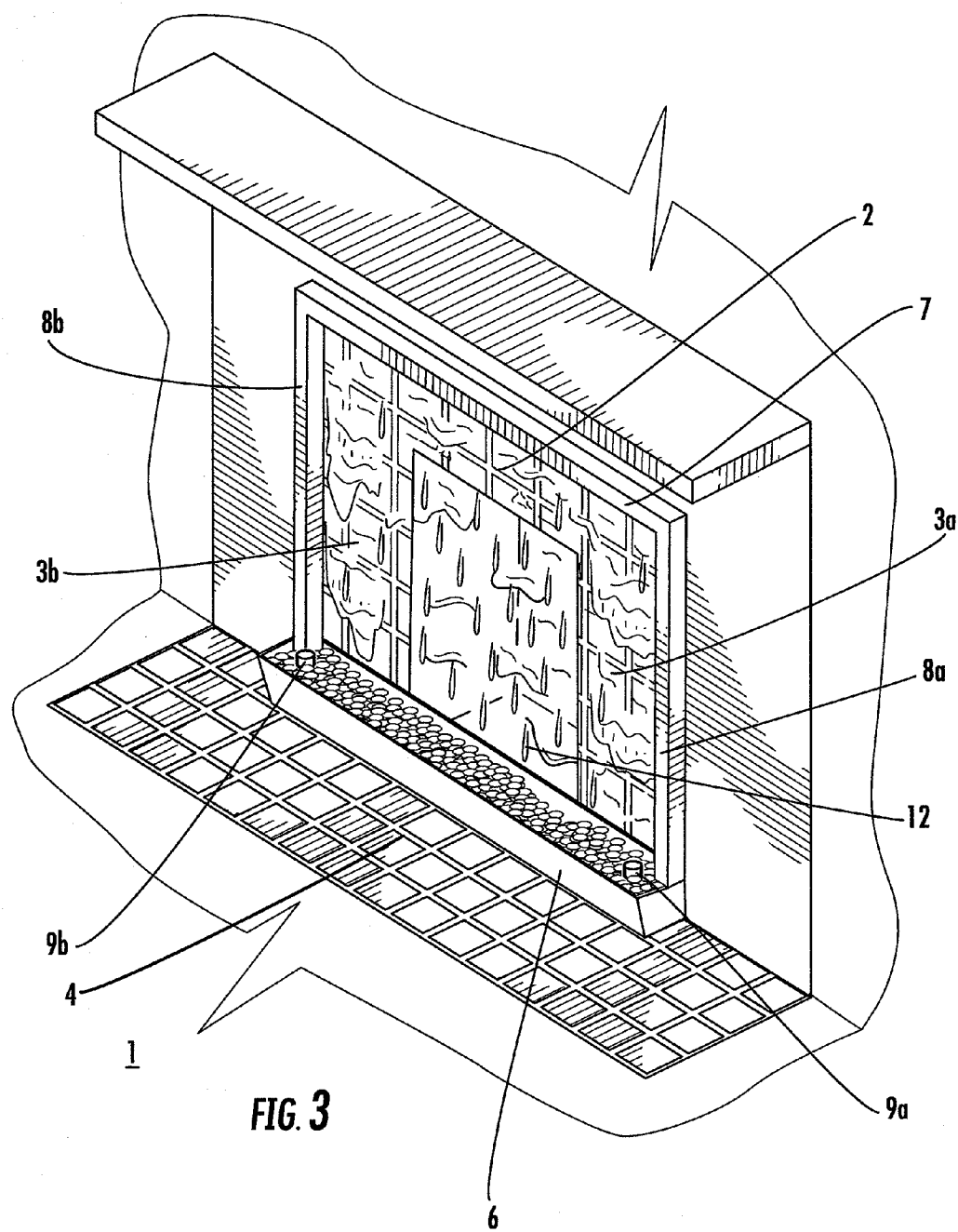


FIG. 1
(PRIOR ART)





FIREPLACE FOUNTAIN APPARATUS

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The invention relates to a fireplace fountain apparatus, in particular an apparatus which enables water to stream down the top and side portions of a fireplace surrounding a firebox.

[0003] 2. Introduction

[0004] The ornamental display of fire and water is aesthetically pleasing to many observers. Several indoor and outdoor devices attempt to integrate these two opposed elements in a complimentary way. In indoor displays, the integration of the two is frequently made in order to suggest a natural, outdoor setting. Thus, the fire in the firebox is preferably presented suggesting a campfire and the water is preferably presented suggesting a tranquil waterfall or babbling brook.

[0005] Notwithstanding an aesthetic preference for the integration of the two elements in the indoor setting, during colder months, an indoor fireplace often also performs a heating function. A presentation which limits or diminishes the performance of this heating function should be avoided. However, in summer months, when maintaining a flame in the fireplace may be undesired it is preferable to still be able to present the water fountain display without accentuating the absence of a flame in the firebox.

[0006] U.S. Pat. No. 5,092,312 ("the '312 patent") discloses a device which integrates water and fire in a fireplace display by spraying water upward from a moat adjacent to the firebox. The upward spray of the water both obscures the view of the fire and reduces the efficacy of the fireplace in heating. Such a display is also unnatural in appearance because upward spraying water rarely occurs naturally.

[0007] Similarly, U.S. Pat. No. 6,901,925 ("the '925 patent") discloses an apparatus which allows water to fall from a hood extending above and forward of the firebox. Such a display is more natural in appearance than the display effected by the apparatus of the '312 patent, but still suffers the disadvantages created by cascading water in front of the flame, especially that the view of the flame is obscured and the heating function is impaired. It also precludes access to the firebox while the fountain is operational, which may be necessary for a variety of reasons, including, for example, in order to open or close the flue, to operate a pilot light, to stoke the fire or to add fuel. Thus, while the apparatus of the '925 patent may be somewhat useful in gas-fueled fireplaces, it is less advantageous for wood burning fireplaces. Finally, while the cascading water creates the impression of a waterfall, it does not convey the quieter serenity of flowing water.

[0008] Finally, neither the '312 patent nor the '925 patent discloses an apparatus which may easily be modified during seasons when maintaining a flame in the firebox is undesirable.

[0009] 3. Objects of the Invention

[0010] It is, therefore, an object of the invention to provide a fireplace fountain apparatus which integrates water and fire in a way that presents the serenity of naturally flowing water without obscuring the presentation of the fire to the observer. It is also an object of the invention to provide a fireplace fountain which integrates the two elements in a fashion that neither diminishes nor hinders the production or transference of heat from the firebox to the surrounding room and does not prevent access to the firebox while the fountain is in operation. It is also an object of the invention to provide an appa-

ratus which permits an easy modification of the device to display running water when fire is not displayed in the firebox and which modification affords energy efficiency in facilities that may be air conditioned during periods when the firebox is not in use. These and other objects are accomplished by the fireplace fountain apparatus disclosed herein.

BRIEF SUMMARY OF THE INVENTION

[0011] According to the present invention, these objects are achieved by a fireplace fountain in which water flows over the surface of the top and side surfaces adjacent to the firebox. A diverting trough adjacent to the top of the firebox collects water flowing downward from above the firebox and directs it laterally to pipes communicating with a central reservoir basin at the base of the fireplace. Preferably the reservoir basin extends the full width of the fireplace. In such a configuration, the water flowing over the surface of the fireplace structure lateral to the firebox flows downward over the structure and directly into the reservoir basin.

[0012] A pump communicates water from the reservoir basin through pipes on the sides of the structure to the distribution pipe on the top of the fireplace. Water is directed to the top and side portions of the fireplace either by nozzles or, alternatively, through slots or holes in the distribution pipe adjacent the side and top portions of the fireplace. The water is delivered to the fireplace structure's surface in a volume and rate of flow which permits the water to flow over the structure, adhering thereto by surface tension, downward to the diverting trough or directly to the reservoir basin.

[0013] In an alternative embodiment, a non-porous insert is placed in front of the firebox. The insert may be installed by removing the diverting trough adjacent to the top of the firebox and the pipes lateral to the firebox and installing an insert of glass, Plexiglas or other non-porous material over the face of the firebox. The insert is then sealed to the outer face of the firebox. Alternatively, the insert may be installed by removing the bottom section of the diverting trough and sealing the top of the insert to the side wall of the diverting trough adjacent the fireplace structure. The sides of the insert are then sealed to the pipes lateral to the firebox. In this fashion the lateral pipes provide a supporting structure for the insert.

[0014] In either event, water flowing from the distribution trough at the top of the fireplace, flows over that portion of the fireplace structure above the firebox and then over the insert and directly to the reservoir basin. As water also continues to flow over the lateral portions of the fireplace structure, the effect created is a unitary wall of uninterrupted flowing water from the top of the fireplace structure to the bottom. In this fashion, the insert can be employed during warm seasons when use of the fireplace for heating or otherwise is unlikely. In such periods, the insert serves the additional salutary purpose of creating a barrier for air communicating from the room to the fireplace chimney, thus improving energy efficiency during months when the room is being air conditioned. The insert may be restored and the diverting trough assembly can be re-assembled during colder seasons to permit use of the fountain with the fireplace.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The invention is described in detail with reference to the following drawings in which like reference numerals refer to like elements:

[0016] FIG. 1 is a perspective frontal view of a fireplace of common construction before implementation of the invention;

[0017] FIG. 2 is a perspective top view of a preferred embodiment of the invention.

[0018] FIG. 3 is a perspective frontal view of a preferred embodiment of the invention with a firebox insert.

DETAILED DESCRIPTION OF THE INVENTION

[0019] FIG. 1 shows a fireplace structure (1) of common construction with a preferred embodiment of the fireplace fountain invention. The structure is made of relatively durable and non-porous material, such as tile, brick, stone, slate, marble or the like, and includes a top portion (2), two lateral portions (3a, 3b) and a base portion (4). These sections frame an aperture (5) comprising a firebox. In traditional wood burning fireplaces access to the firebox through the aperture is necessary in order to provide wood for the fire, to open or close the chimney flue, to remove ashes and to tend the fire. Access for gas operated fireboxes may be necessary to operate a pilot light or to open a flue.

[0020] As shown in FIG. 2, a fireplace with a preferred embodiment of the invention comprises a reservoir basin (6) at the base of the fireplace structure extending across the front of the aperture to the lateral extent of each lateral portion (3a, 3b) of the fireplace structure. The reservoir basin is of sufficient width and depth to permit the basin to retain water necessary for the operation of the fireplace fountain. At the locations where the top back edge of the reservoir basin meets the lateral portion of the fireplace structure, the edge is sealed flush to the structure. A bead of silicon sealer or other sealing mechanism may be used for this purpose.

[0021] On the superior edge of the top portion of the fireplace structure, a generally horizontal distribution pipe (7) is disposed extending to the lateral extent of each lateral portion of the fireplace structure. The distribution pipe (7) comprises a means for delivering water from the pipe to the surface of the fireplace structure below the distribution pipe. A plurality of holes or slots in a portion of the distribution pipe adjacent to the fireplace structure is sufficient for this purpose. Alternatively, nozzles may be disposed to spray water under low pressure from the pipe to the surface.

[0022] On at least one end of the distribution pipe and preferably on both ends, generally vertical lateral pipes (8a, 8b) are disposed on the outside edges of the lateral portions of the fireplace structure. The lateral pipes extend downward in to the reservoir basin (6) and are in fluid communication with the distribution pipe (7).

[0023] At least one, and preferably two circulation pumps (9a, 9b) are situated within the basin and disposed to draw water from the basin and to deliver it through one or more lateral pipes to the distribution pipe. It is preferable to adjust the volume of water pumped so that water is delivered through the distribution pipe and to the fireplace structure under low pressure and so that the effect of water flowing over the non-porous surface of the fireplace structure is achieved.

[0024] In the preferred embodiment shown in FIG. 2, the distribution pipe (7) and the lateral pipes (8a, 8b) are shown as pipe elements with a generally square cross-section. Such a configuration allows each pipe element to be sealed on its outside edge and, preferably, also on the inside edge of the pipe element, so that the flowing water is confined to the area framed by the pipe elements and the reservoir basin (5). Those skilled in the art, however, will recognize that piping of any

cross-sectional shape or configuration may be used in the construction of the lateral pipe and distribution pipe. Additionally, where the structure of the fireplace so permits, the lateral pipes may be recessed into the structure or may be installed lateral to the structure. Either the lateral pipes or the distribution pipes or both may comprise flexible tubing housed within a structure such as an element with a square cross-section similar to the shape of the lateral pipes shown in FIG. 2.

[0025] Disposed above the firebox aperture (5) is a diversion trough (10). The diversion trough extends to the full lateral extent of the aperture and is open on the top and disposed to receive water flowing downward from the distribution pipe. The top edge of the trough adjacent to the fireplace structure is sealed flush to the structure. The diversion trough collects the water flowing downward from the distribution pipe toward the aperture and diverts it to one, or preferably both sides of the aperture.

[0026] In the preferred embodiment and as shown in FIG. 2, the diversion trough (10) is constructed so that its bottom portion has a central apex. In this way, water is diverted equally to the left and right sides of the aperture. The diversion trough (10) may also be in fluid communication with one or more lateral diversion troughs or pipes (11a, 11b). The lateral diversion troughs or pipes (11a, 11b), which are generally vertical and extend from an end of the diversion trough (10) to the reservoir basin (5), receive water from the trough and deliver it to the reservoir basin (5). Although FIG. 2 depicts lateral diversion troughs, the use of closed lateral pipes may preferably distribute water to the reservoir without excessive noise or splashing.

[0027] Where the fireplace structure is composed of porous material or for aesthetic reasons, a non-porous surface panel may be installed adjacent the fireplace structure in the area over which the water flows. Such a surface panel is sealed to the bottom edge of the distribution pipe (7), the inside edges of the lateral distribution pipes (8a, 8b) the top edge of the basin (6), as well as the lateral edges of the lateral diversion pipes (11a, 11b), and the top edge of the diversion trough (10). The surface panel may be made of a non-porous material and may be either flexible or rigid. For example, plastic film, Plexiglas, glass, mirrored glass, slate or other material may be used as a non-porous surface panel. Those skilled in the art will recognize that where a surface panel as disclosed herein is used, the apparatus may be freestanding and need not be affixed to the fireplace structure.

[0028] FIG. 3 shows a fireplace structure (1) of common construction with an alternate preferred embodiment of the fireplace fountain invention. The structure is made of relatively durable and non-porous material, such as tile, brick, stone, slate, marble or the like, and includes a top portion (2), two lateral portions (3a, 3b) and a base portion (4). These sections frame an aperture comprising a firebox.

[0029] As shown in FIG. 3, an insert (12) made of non-porous material is fitted within the firebox aperture. An insert of glass, Plexiglas, plastic non-corroding metal, or other non-porous material may be used. The top and side edges of the insert are sealed to the fireplace structure with a watertight, but removable seal. Waterproof tape, rubber, silicon or similar material may be used to form the seal.

[0030] A reservoir basin (6) at the base of the fireplace structure extends across the front of the aperture to the lateral extent of each lateral portion (3a, 3b) of the fireplace structure. The reservoir basin is of sufficient width and depth to

permit the basin to retain water necessary for the operation of the fireplace fountain. At the locations where the top back edge of the reservoir basin meets the lateral portion of the fireplace structure, the edge is sealed flush to the structure. A bead of silicon sealer or other sealing mechanism may be used for this purpose.

[0031] The bottom edge of the insert (12) extends into the reservoir basin (6). Alternatively, the bottom edge of the insert is sealed flush with the top back edge of the reservoir basin (6) with a watertight, but removable seal. Waterproof tape, rubber, silicon or similar material may be used to form the seal.

[0032] On the superior edge of the top portion of the fireplace structure, a generally horizontal distribution pipe (7) is disposed extending to the lateral extent of each lateral portion of the fireplace structure. The distribution pipe (7) comprises a means for delivering water from the pipe to the surface of the fireplace structure below the distribution pipe. A plurality of holes or slots in a portion of the distribution pipe adjacent to the fireplace structure is sufficient for this purpose. Alternatively, nozzles may be disposed to spray water under low pressure from the pipe to the surface.

[0033] On at least one end of the distribution pipe (7) and preferably on both ends, generally vertical lateral pipes (8a, 8b) are disposed on the outside edges of the lateral portions of the fireplace structure. The lateral pipes extend downward into the reservoir basin (6) and are in fluid communication with the distribution pipe (7).

[0034] At least one and preferably two circulation pumps (9a, 9b) are situated within the basin and are disposed to draw water from the basin and deliver it through one or more lateral pipes to the distribution pipe. It is preferable to adjust the volume of water pumped so that water is delivered through the distribution pipe and to the fireplace structure under low pressure and so that the effect of water flowing over the non-porous surface of the fireplace structure is achieved.

[0035] In the preferred embodiment shown in FIG. 3, the distribution pipe (7) and the lateral pipes (8a, 8b) are shown as pipe elements with a generally square cross section. Such a configuration allows the pipe element to be sealed on its outside edges and, preferably, also on the inside edge of the lateral pipe portions of the element, so that the flowing water is confined to the area framed by the pipe elements and the reservoir basin (6). Those skilled in the art, however, will recognize that piping of any cross-sectional shape or configuration may be used in the construction of the lateral pipe and distribution pipe. Additionally, where the structure of the fireplace so permits, the lateral pipes may be recessed into the structure or may be installed lateral to the structure. Either the lateral or the distribution pipes or both may comprise flexible tubing housed within a structure such as an element with a square cross-section similar to the shape of the lateral pipes shown in FIG. 3.

[0036] The alternate embodiment of the fireplace fountain invention shown in FIG. 3 provides an uninterrupted flow of cascading water over the fireplace structure during periods when the firebox is not in use. Water flows from the distribution pipe (7) downward over the top portion (2) of the fireplace structure, as well as over the lateral portions (3a, 3b) and the insert (12).

[0037] When it becomes desirable to use the firebox for a fire, the insert may be removed and a diversion trough and diversion pipes may be re-installed. Similarly, when use of the firebox is not contemplated, the diversion trough and any diversion pipes may be removed and the insert installed.

[0038] The invention has been described in regard to its preferred embodiment. It will be apparent to those skilled in the art that the same may be varied in many ways without departing from the spirit and scope of the invention. All such modifications are intended to be included within the scope of the following claims.

I claim:

1. A fireplace fountain apparatus for a fireplace structure having an aperture for a firebox, comprising:
 - a reservoir basin disposed to retain water;
 - a distribution pipe superior to said aperture with means for delivering water to the surface of said fireplace structure;
 - at least one lateral pipe in fluid communication with said distribution pipe;
 - a pump, in fluid communication with said basin and at least one lateral pipe, wherein said pump communicates water from said reservoir through said lateral pipe to said distribution pipe, and;
 - a diversion trough superior to said aperture and inferior to said distribution pipe wherein said diversion trough diverts water lateral of said aperture and into said reservoir basin.
2. The fireplace fountain apparatus of claim 1 wherein said distribution pipe extends lateral of said aperture and wherein water delivered to the surface of said fireplace structure lateral of said aperture flows directly into said reservoir basin.
3. The fireplace fountain apparatus of claim 1 further comprising at least one diversion pipe in fluid communication with said diversion trough and in fluid communication with said reservoir basin wherein said water diverted by said diversion trough flows through said diversion pipe to said reservoir basin.
4. The fireplace fountain apparatus of claim 1 further comprising
 - a diversion trough having a central apex and having a first and second ends;
 - a first diversion pipe, said first diversion pipe disposed lateral of said firebox and in fluid communication with said first end of said diversion trough and in fluid communication with said reservoir basin;
 - a second diversion pipe, said second diversion pipe disposed lateral of said firebox and in fluid communication with said second end of said diversion trough and in fluid communication with said reservoir basin,
 wherein water is diverted by said diversion trough to said first and second diversion pipes and flows through said first and second diversion pipes to said reservoir basin.
5. A fireplace fountain apparatus for a fireplace structure having an aperture for a firebox, comprising:
 - a reservoir basin disposed to retain water;
 - a surface panel;
 - a distribution pipe superior to said aperture with means for delivering water to said surface panel, said distribution pipe having a first and second end;
 - a first and second lateral pipe, said first lateral pipe in fluid communication with said first end of said distribution pipe and with said reservoir basin and said second lateral pipe in fluid communication with said second end of said distribution pipe and with said reservoir basin;
 - a pump, in fluid communication with said basin and at least one lateral pipe, wherein said pump communicates water from said reservoir through said lateral pipe to said distribution pipe;

a diversion trough superior to said aperture and inferior to said distribution pipe having a first and second end and wherein said diversion trough diverts water lateral of said aperture, and;

a first and second diversion pipe, said first diversion pipe in fluid communication with said diversion trough at said first end and with said reservoir basin and said second diversion pipe in fluid communication with said diversion trough at said second end and in fluid communication with said reservoir basin, wherein said water diverted by said diversion trough flows through said diversion pipes to said reservoir basin;

wherein said surface panel extends across the area defined by said distribution pipe, said first and second lateral pipes, said reservoir, said first and second diversion pipes and said diversion trough.

6. A fireplace fountain apparatus for a fireplace structure having an aperture for a firebox, comprising:

a reservoir basin with water;

a distribution pipe superior to said aperture with means for delivering water to the surface of said fireplace structure; at least one lateral pipe in fluid communication with said distribution pipe;

a pump, in fluid communication with said basin and at least one lateral pipe, wherein said pump communicates water from said reservoir through at least one lateral pipe to said distribution pipe, and;

a non-porous insert disposed within said aperture wherein said water distributed to the surface of said fireplace structure flows over said structure and over said non-porous insert and into said reservoir basin.

7. The fireplace fountain apparatus of claim 6 wherein said distribution pipe extends lateral of said aperture and wherein water delivered to the surface of said fireplace structure lateral of said aperture flows directly into said reservoir basin and water distributed over said aperture flows over said non-porous insert and into said reservoir basin.

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