A manufactured stone comprised of a manufactured material, such as cement, foam, plastic, or the like, and a fastener affixed to the manufactured material. The fastener is dimensioned for a fastening device to attach the fastener to a surface, thereby attaching the manufactured stone to the surface. A portion of the fastener may be embedded in or bonded to the manufactured material. Installing the manufactured stone on a surface includes attaching the stone to the surface by applying a fastening device to the fastener. The fastening device may be a nail, screw, or the like, that is driven through the fastener into the surface. Alternatively, the fastening device may be a bonding material that bonds the fastener to the surface. The fastener may further include a flange portion that extends outward from the manufactured stone and is inserted behind an adjacent stone previously installed on the surface.
FASTENER SYSTEM AND METHOD FOR ATTACHING MANUFACTURED BRICK OR STONE TO A SURFACE

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The benefit of the filing date of U.S. Provisional Application No. 60/322,559, filed Sep. 10, 2001, is hereby claimed under 35 U.S.C. § 119(e), the entire disclosure of which is expressly incorporated by reference herein.

FIELD OF THE INVENTION

[0002] The present invention relates generally to manufactured brick and stone and, more particularly, to attaching the same to a surface.

BACKGROUND OF THE INVENTION

[0003] Manufactured brick and stone have been available for many years as a building material for a variety of structures. In particular, veneer manufactured brick and stone can be affixed to a surface to give the appearance that the structure is made of real brick and stone.

[0004] At the present time, makers of manufactured stone rely on the same basic manufacturing methods. The manufacturing process involves first creating a mold from real brick and stone. This mold, typically made of rubber, is then filled with a lightweight manufactured material that takes the shape of the mold. The mold is typically vibrated to cause air pockets and bubbles to rise up and exit the manufactured material. After a sufficient period of time, the hardened cement is pulled from the mold. The result is a lightweight stone that is flat on the backside and on the front side has the shape and appearance of real stone.

[0005] Manufactured stone is typically made of pumice or other types of cementitious product that are light in weight. Coloring can be added to the manufactured material or to the surface of the mold to cause the manufactured stone to take the appearance of various types of naturally occurring stone.

[0006] At the present time, manufactured stone is attached to a surface, such as an outside or inside wall of a building, in the following manner. First, the surface is prepared to receive the manufactured stone. If the manufactured stone is to be applied to a surface made of wood or other non-cement surface, a vapor barrier is attached to the surface to prevent water penetration. Following that, a wire mesh (lath) is laid over the vapor barrier and secured to the surface. A scratch coat is then applied to the wire mesh by spreading a layer of mortar on the mesh and allowing it to penetrate the mesh. The scratch coat, once set, provides a cement surface to which the stones are attached.

[0007] Manufactured stone is then affixed to the prepared surface by taking each stone and applying approximately ½ inch of mortar to the backside of the stone. Once the backside of the stone is “buttered” with mortar in this manner, the stone is applied to the surface. To avoid dripping of mortar onto other stones already attached to the surface, the stones are generally applied starting with the upper corners and working from the top down. Pressure is typically applied to each stone so that a portion of the mortar squeezes out around the sides of the stone.

[0008] After the manufactured stone has been applied to the surface, grout may be inserted between the stones where desired. Often, grout is applied by squeezing mortar from a bag, much like decorating a cake. Grouting helps prevent water from penetrating behind the stones and further aids in keeping the stones adhered to the surface.

[0009] After the grout is set, a striking tool or other object is used to remove excess mortar from between the joints of the stone. This is typically referred to as striking the joints. After striking the joints, loose grout is usually brushed away with a small whisk or other type of broom.

[0010] Finally, after allowing the mortar and the grout to dry, a scaler may be applied to the stone and grout to protect it from water penetration and help in keeping the stone clean.

[0011] While the foregoing prior art method is widely practiced by professional masons to attach manufactured stone to a surface, this method requires a significant amount of time and labor to install, as shown above. The cost of installing manufactured stone frequently accounts for 75% or more of the finished costs.

[0012] There are other disadvantages in the prior art manufactured stone and method of installation described above. Because of the method of installation, current building codes typically limit the installation of manufactured stone to a maximum of 30 feet in height, without a structural break in the wall. Moreover, stones that are not properly installed may detach from the wall and fall off, possibly injuring persons or objects below. The problem of falling stones is further complicated by acts of nature that cannot be controlled or prevented, such as earthquakes. Furthermore, because of the difficulty of installation, manufactured stone is generally installed by professional masons. Installation is generally viewed as a project that requires professional assistance.

[0013] What is needed is a manufactured stone and method of attachment that requires less time, expense, and material in which to install. In some circumstances, it is also desired to install manufactured stone at heights greater than 30 feet without a structural break in the wall. Elimination of the problem of falling stones is also desired. The present invention addresses these needs and other shortcomings in the prior art.

SUMMARY OF THE INVENTION

[0014] A manufactured stone with a fastener system and method for attaching the manufactured stone to a surface is provided with the present invention. Herein, the term “manufactured stone” is used generically to refer to all types of brick or stone that are manufactured, regardless of other product names applied thereto. In one aspect, a manufactured stone made according to the invention is comprised of a manufactured material, such as cement, foam, or the like, formed to make the body of the manufactured stone, and a fastener affixed to the manufactured material. The fastener is dimensioned for a fastening device to attach the fastener to a surface, thereby attaching the manufactured stone to the surface.

[0015] The fastener may be made of a variety of material, including metal or plastic. In some embodiments, the fastener is preferably made of a strip of sheet metal. A portion
of the fastener may be embedded in the manufactured material to affix the fastener to the manufactured stone. The fastener may also be affixed to the manufactured stone by bonding the fastener to the manufactured material of the manufactured stone.

[0016] Another aspect of the present invention is an improved method of installing manufactured stone on a surface. The method includes providing a manufactured stone formed of a manufactured material and a fastener affixed to the manufactured material, the fastener being dimensioned for a fastening device to attach the fastener, and thereby the manufactured stone, to the surface. The manufactured stone is attached to the surface by applying a fastening device to the fastener and the surface. The fastening device may be a nail, screw, or the like, that is driven through the fastener into the surface. Alternatively, the fastening device may be a bonding material that is applied to the fastener which bonds the fastener to the surface.

[0017] The fastener may further include a flange portion that extends from the manufactured stone. According to a method of the present invention, the flange portion is inserted behind an adjacent stone that was previously installed on the surface.

[0018] In accordance with yet another aspect of the invention, a fastener is provided for attaching a manufactured stone to a surface. The fastener comprises a first portion that is affixed to the manufactured stone and a second portion, connected to the first portion, that is dimensioned for a fastening device to attach the second portion of the fastener to the surface.

[0019] The first portion of the fastener may be embedded in the manufactured stone to affix the fastener to the stone. The fastener may further comprise a tab connected to the first portion that extends outward from the fastener into the manufactured stone. The fastener may also comprise a hole in the first portion dimensioned to permit a portion of the manufactured stone to extend therethrough when the manufactured stone is being made. With a tab or a hole defined in this manner, the fastener may be more securely affixed to the manufactured stone.

[0020] The fastener may further comprise a hole in the second portion that is dimensioned to permit a fastening device to extend therethrough into the surface. For instance, where the fastening device is a nail or screw, the nail or screw is driven through the hole into the surface to attach the fastener, and thereby the manufactured stone, to the surface.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] The foregoing aspects and many of the attendant advantages of this invention will become more readily appreciated as the same become better understood by reference to the following detailed description, taken in conjunction with the accompanying drawings, wherein:

[0022] FIG. 1 is a perspective view of a manufactured stone constructed in accordance with the present invention having a fastener attached thereto;

[0023] FIG. 2 is a top view of the manufactured stone shown in FIG. 1;

[0024] FIG. 3 is an end view of the manufactured stone shown in FIG. 1;

[0025] FIG. 4 is a perspective view of a fastener constructed in accordance with the present invention;

[0026] FIG. 5 is a top view of the fastener shown in FIG. 4;

[0027] FIG. 6 is a side view of the fastener shown in FIG. 4;

[0028] FIG. 7 is a perspective view of a mold being used to make manufactured stone in accordance with the present invention;

[0029] FIG. 8 is a top view of the mold shown in FIG. 7;

[0030] FIG. 9 is a perspective view of another manufactured stone constructed in accordance with the present invention having a plurality of fasteners attached thereto;

[0031] FIG. 10 is a top view of the manufactured stone in FIG. 9;

[0032] FIG. 11 is an end view of the manufactured stone in FIG. 9;

[0033] FIG. 12 is a top view of another fastener constructed in accordance with the present invention;

[0034] FIG. 13 is a side view of the fastener shown in FIG. 12;

[0035] FIG. 14 illustrates an installation of manufactured stone made in accordance with one embodiment of the invention;

[0036] FIG. 15 illustrates an installation of manufactured stone made in accordance with another embodiment of the present invention;

[0037] FIG. 16 is a top view of another fastener constructed in accordance with the present invention;

[0038] FIG. 17 is a perspective view of the fastener shown in FIG. 16;

[0039] FIG. 18 is an end view of the fastener shown in FIG. 16;

[0040] FIG. 19 is a side view of the fastener shown in FIG. 16;

[0041] FIG. 20 is a perspective bottom view of a manufactured stone made in accordance with the present invention having fasteners attached thereto;

[0042] FIG. 21 is an end view of the manufactured stone shown in FIG. 20; and

[0043] FIG. 22 is a bottom view of another manufactured stone made in accordance with the present invention having a fastener attached thereto.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0044] The terms “manufactured stone” and “stone” are used generically herein to refer to all types of brick or stone that are manufactured, regardless of any commercial product name, such as cultured stone, veneer stone, veneer brick, faux stone, etc. For ease of reference, the terms “manufactured stone” and “stone” are used herein, but should not be considered limiting as to the type or form of manufactured brick or stone involved.
FIG. 1 illustrates a perspective view of a manufactured stone 10 made in accordance with the present invention. The stone 10 includes a fastener 18 attached thereto. The fastener 18 has a flange portion 12 extending from the bottom of the stone 10 in an orientation somewhat parallel to the bottom surface of the stone 10.

As shown in FIG. 1, the manufactured stone 10 further includes a shoulder portion 14. When the manufactured stone 10 is installed on a surface, the shoulder portion 14 abuts the shoulder portions of other manufactured stones attached to the surface and provides a space between the manufactured stones to apply grout. Nevertheless, the shoulder portion 14 is not necessary to practice the invention, as is evident from the manufactured stone shown in FIGS. 9-11. The outer surface portions 16 of the manufactured stone 10 may have a textured appearance.

FIG. 2 is a top view of the manufactured stone 10 shown in FIG. 1. In FIG. 2, the fastener 18 is shown in more detail, with those portions of the fastener 18 embedded in the stone 10 being shown in dotted line.

The fastener 18 includes flange portions 12 and 24 that extend from the manufactured stone 10 somewhat parallel to the bottom surface of the stone 10. The flange portions 12 and 24, as shown, include holes 22 and 26 defined therein. As better viewed in FIG. 3 and in FIGS. 4-6, the fastener 18 further includes a raised portion 25 that, when embedded in the manufactured stone, extends into the stone 10. For the manufactured stone 10, which includes shoulders 14, the raised portion 25 is sized in length to sit within the larger central portion of the stone 10 so as to remain hidden from view. As shown in FIG. 3, the raised portion 25 is connected to the flange portions 12 and 24 in the central part of the stone 10. The flange portions 12 and 24 are bent to be approximately parallel to the bottom surface of the stone 10.

FIGS. 4-6 provide a more detailed view of the fastener 18 shown in FIGS. 1-3. In this particular embodiment of a fastener, the fastener 18 is preferably formed of a strip of sheet metal with two bends of approximately 90° at each end of the raised portion 25 to provide the lower flange portions 12 and 24. The raised portion 25, as illustrated, includes oval-shaped holes 28 and 30 through which the manufactured material of a manufactured stone may extend when the fastener 18 is embedded in the stone.

FIGS. 7 and 8 illustrate a mold 40 for making a manufactured stone with fasteners affixed thereto in accordance with the present invention. The mold 40 may be made of rubber and includes cavities previously formed from real brick or stone set in the mold prior to the mold being cured. When making manufactured stone, a manufactured material is deposited into the cavities, preferably to excess, with the excess portion being scraped from the top surface of the mold 40. For the present invention, the material of the manufactured stone may be any kind of manufactured material, such as a cement, foam, or plastic product, or the like.

The left side of the mold 40 depicts a cavity filled with manufactured material for making the body of the manufactured stone 10 shown in FIGS. 1-3. Either prior to, during, or after the manufactured material is deposited in the mold 40, the attachment 18, as depicted in FIGS. 4-6, is embedded in the manufactured material, with the flange portions 12 and 24 resting outside the cavity on the upper surface of the mold 40. Again, as with respect to FIGS. 4-6, the fastener 18 may include holes 28 and 30 through which the manufactured material may extend to help further secure the fastener 18 within the manufactured stone 10. The holes 28 and 30, however, are not necessary to practice the invention.

If necessary, the manufactured material is then allowed to set. Once the manufactured material has set, the manufactured stone 10 may be removed from the mold 40. The fastener 18 is permanently embedded in the stone 10. It should be noted that other manufacturing processes may be used to make manufactured stone according to the present invention. For instance, an injection mold may be used with the fastener set in place before the manufactured material is injected into the mold. Depending on the manufactured material, the fastener may also be set in place after the injection has occurred.

FIGS. 7 and 8 also depict the making of a manufactured stone 50 (shown on the right side of the mold 40) that is depicted in further detail in FIGS. 9-11. The manufactured stone 50 includes two fasteners 58 and 60 that are embedded and fixed within the stone 50.

FIG. 9 provides a perspective view of the manufactured stone 50 made in accordance with the present invention. The manufactured stone 50 is made, when installed, to appear to be two stones laid on top of each other. The manufactured stone 50 includes an upper stone portion 52 and a lower stone portion 54 separated by a crevice 56. The crevice 56 extends within the stone 50 to make it appear as two stones, but does not extend to the bottom surface of the stone 50.

In a manner similar to that described with respect to the manufactured stone 10, shown in FIG. 1, the manufactured stone 50 includes fasteners affixed thereto. While any number of fasteners may be affixed to a manufactured stone in accordance with the present invention, the manufactured stone 50 includes two fasteners 58 and 60.

The fastener 58 includes flange portions 62 and 70 extending from the stone 50 in an orientation approximately parallel to the bottom surface of the stone 50. Similarly, the fastener 60 includes flange portions 64 and 74 extending from the stone 50. Defined in the flange portions 62, 70 and 64, 74 are holes 66, 72, and 68, 76, respectively. The fasteners 58 and 60 further include raised portions 78 and 80, respectively. Since the manufactured stone 50 does not have shoulder portions as shown with the manufactured stone 10 in FIG. 1, the raised portions 78 and 80 may extend the full width of the stone 50, as shown in FIG. 11. Moreover, the flange portions 62, 70 and 64, 74 do not extend from the bottom of the stone 50, but instead extend from the sides of the stone 50, flush with the bottom surface of the stone 50. These variations in the size and dimensions of the fasteners 18 and 58, 60, are illustrative of the fact that fasteners made according to the present invention can take a variety of form and shape, without limitation, and still provide the advantages of the invention, as described herein.

In the embodiment of the invention shown in FIGS. 9-11, the fastener 60 is of identical shape and form as the fastener 58, though such is not necessary. Where a manu-
factured stone has multiple fasteners affixed thereto, the fasteners may be of different shape or form, as desired. The fastener 58 is depicted in more detail in FIGS. 12 and 13. The fastener 58 includes lower flange portions 62 and 70 and a raised portion 78 in the center. As with the fastener 18 shown in FIGS. 4-6, the fastener 58 may be formed from a strip of sheet metal in which two 90° bends are made in the sheet metal to create the raised center portion 78. Defined through the flange portions 62 and 70 are holes 66 and 72, respectively. The holes 66 and 72 may be formed by any known method, including punching, grinding, or drilling the sheet metal.

[0058] The fastener 58 also includes oval-shaped holes 82, 84, and 86, defined in the raised portion 78. As with the holes 28 and 30 in the fastener 18 (FIGS. 4-6), the holes 82, 84, and 86 in the fastener 58 are optional, and when included in the fastener 58, permit the manufactured material of the stone 50 to extend therefrom and further secure the fastener 58 to the stone 50.

[0059] Next is described a method of installing manufactured stone made in accordance with the present invention. FIG. 14 depicts a surface 100 with several rows of manufactured stone attached thereto. The upper row of manufactured stone includes stones 102, 104, 106, and 108. The manufactured stone 102 includes a fastener with a flange portion 110 extending upwardly along the surface 100. The manufactured stone 102 has previously been attached to the surface 100 by driving a nail, screw, or other fastening device through the hole in the flange portion 110. Similarly, the manufactured stones 104, 106, 108 have previously been attached to the surface 100 by driving a fastening device through the holes in the upper flange portions 112, 114, and 116 that are attached to each of said stones.

[0060] As illustrated in FIG. 14, a manufactured stone 118 is attached to the surface 100 (here, as the beginning of a new row of stones) by placing the bottom side of the stone 118 against the surface 100. The flange portions 120 and 122 of the fastener 119 attached to the stone 118 lie against the surface 100. The stone 118 is then slid downwardly along the surface 100 as shown. As the lower flange portion 120 approaches the previously-installed stone 104, the flange portion 120 slides behind the stone 104 to make a close fit between the back surface of the stone 104 and the surface 100. The lower side edge of the stone 118 rests in close proximity to the upper side edge of the stone 104. A fastening device, such as a nail, a screw, or the like, is driven through the hole 124 of the upper flange portion 122, into the surface 100, thus securing the fastener 119, and consequently the manufactured stone 118 to the surface 100. Additional stones are secured in like manner to the side of and above the manufactured stone 118 to finish covering the surface 100. Generally, for each manufactured stone, the lower flange portion(s) of fastener(s) affixed thereto are slid behind adjacent stones and the upper flange portion(s) of the fastener(s) are positively secured to the surface 100. This is repeated from the bottom to the top of the surface 100.

[0061] In FIG. 14, the flange portions of the fasteners of stones previously installed on the surface 100 are shown in dotted line to illustrate the flange portions resting behind the adjacent manufactured stones. For the manufactured stones affixed on the bottom row of the surface 100, the lower flange portions of the fasteners are shown removed, so that the stones sit flush with the bottom edge of the surface 100. Alternatively, the lower flange portions of those stones may be driven into or behind whatever material lies below the bottom edge of the surface 100.

[0062] FIG. 15 illustrates another embodiment that demonstrates the wide application of the present invention. In FIG. 15, the manufactured stones are somewhat circular in shape, as is the case for river rock.

[0063] To accommodate the irregular shape of manufactured stone made to look like river rock and the like, fasteners may be constructed according to the invention and affixed to the stone to extend at various angles from the stone. As shown in FIG. 15, a surface 130 is being covered with irregularly shaped manufactured stone. Thus far in the illustration, the surface 130 has been covered with stones 132. Upper flange portions 134 of fasteners affixed to the stones in the top row have previously been attached to the surface 130 by driving a fastening device through holes in the flange portions 134. Unlike FIG. 14, the flange portions of fasteners hidden behind the adjacent stones 132 are not shown in phantom, but in fact do lie behind the back surface of adjacent stones 132 against the surface 130.

[0064] Because of its irregular shape, a manufactured stone 136 includes a fastener (or fasteners) having flange portions 138, 140, and 142 extending from the stone 136 at different angles in an orientation approximately parallel to the surface 130. The flange portions 138, 140, and 142 may be connected to each other to form a single fastener (in this case, having a star shape hidden within or behind the stone 136). Alternatively, each of the flange portions 138, 140, and 142 may be separately affixed to the stone 136 (e.g., as shown with the stones 180 and 190 in FIGS. 20-22).

[0065] In FIG. 15, the stone 136 is installed in a manner similar to that described with respect to the stone 118 in FIG. 14. The bottom surface of the stone 136 is placed on the surface 130 so that the flange portions 138, 140, and 142 lie against the surface 130. The stone 136 is then slid along the surface 130, with the lower flange portions 138 and 140 sliding behind the previously installed stones 132. The lower edge of the stone 136 may rest against the upper edge or edges of the stones 132. The upper flange portion 142, which includes a hole 144, is attached to the surface 130 by driving a fastening device through the hole 144 into the surface 130.

[0066] In contrast to the prior art method of installing manufactured stone which begins at the top corners and works downward, manufactured stone made according to the present invention is preferably installed beginning at the bottom edge of the surface and working upward. Each stone is lifted into place, with bottom flange portions sliding behind the adjacent stones below, and the top flange portion of the fastener being positively attached to the surface.

[0067] As noted earlier, the fasteners 18 and 58, 60 provide only an illustrative example of fasteners constructed according to the present invention. The fasteners depicted herein are not limiting as to the shape and form of the possible fasteners of the invention. FIGS. 16-19 illustrate only one of many other forms that fasteners of the present invention may take.

[0068] The fastener 150, depicted in perspective in FIG. 17, is formed of a flat strip of material, such as sheet metal, plastic, or the like, with various holes, tabs, and raised
portions defined therein. In the particular embodiment shown in FIGS. 16-19, the fastener 150 includes a hole 154 defined on the left side 152 of the fastener. On the right side 156 of the fastener 150, a hole is not defined therethrough, but only for purposes for illustration. Certainly, an alternative embodiment of the invention may include a hole at the right side 156.

[0069] The fastener 150 also includes tab portions 158 and 162 extending from the surface of the fastener 150. A simple way of defining the tabs 158 and 162 is to pierce the material of the fastener 150 and outwardly bend the material to form the tabs 158, 162 leaving holes 160, 164 in the material.

[0070] The fastener 150 further includes raised portions 166 and 168. The raised portions 166 and 168, in the shape of two strips, may be made by simply punching the material of the fastener 150 and forcing outward the strips that define the raised portions 166 and 168.

[0071] The fastener 150 may be affixed to a manufactured stone by applying the fastener 150 to the manufactured material of the stone when the stone is being made. See, e.g., the mold 140 and the process described in regard to FIGS. 6 and 7. The tabs 158, 162 and the raised strip portions 166, 168 extend into and are embedded within the manufactured material of the manufactured stone. The manufactured material may further extend through the holes 160, 164 and 170, 172, in the fastener 150, thus gripping the raised strip portions 166, 168, and further securing the fastener 150 to the manufactured stone.

[0072] Fasteners constructed according to the present invention need not extend across the entire width of the manufactured stone, as shown in FIGS. 1-3 and 9-11. Separate fasteners may be individually affixed to the stone at one or more of the edges of the stone as shown in FIGS. 20-22. In FIG. 20, a manufactured stone 180 has two separate fasteners 182 and 184 attached thereto. As shown, the fastener 182 is attached to the stone 180 by having a portion 186 of the fastener 182 embedded in the manufactured material of the stone 180. Likewise, the fastener 184 has a portion 188 embedded in the stone 180, thus securing the fastener 184 to the stone 180. As previously discussed, the fasteners 182, 184 may include various holes, tabs, and/or raised portions that permit the fastener to be secured both to the stone 180 and to a surface when the stone 180 is installed.

[0073] As shown in FIG. 20, the fastener 182 includes a hole 183, defined therein. For purposes of illustration, the fastener 184 is shown without a hole. The stone 180 may be attached to a surface by sliding the fastener 184 behind an adjacent stone and driving a fastening device through the hole 183 in the fastener 184 into the surface. Alternatively, if holes are not defined in the fastener, the stone 180 may be affixed to a surface by gluing, bonding, or otherwise adhering the fastener or fasteners to the surface. Fastening devices may also be used with fasteners not having holes. The fastening devices may be simply made to pierce the material of the fasteners prior to being driven into the surface to which the stone 180 is attached. Furthermore, the embedded portions 186, 188 of the fasteners 182, 184 need not take the exact form illustrated in FIGS. 20 and 21, but instead may have various twists, curves, bends, or other shapes to help secure the fasteners 182, 184 within the stone 180.

[0074] It is not necessary that multiple fasteners be attached to a manufactured stone in order to achieve the advantages of the present invention. FIG. 22, for instance, depicts a manufactured stone 190 with a single fastener 192 attached thereto. The stone 190 is installed by placing the bottom edge of the stone 190 against another stone and attaching the fastener 192 to the surface on which the stone is installed. It should also be noted that the fasteners of the present invention, such as fastener 192, need not be embedded within the stone 190, to achieve the benefits of the invention, provided the fasteners are securely fixed to the manufactured stone. The fastener 192 may be affixed to the stone 190 by other means, including gluing, or bonding the fastener 192 to the stone 190. Suitable glues or other bonding material are commercially available and known in the art.

[0075] There are many advantages and benefits achieved by the present invention. First, the present invention significantly reduces the amount of time required for installation. It is estimated that less than half the labor time is required to install the manufactured stone of the present invention, resulting in a significant cost savings for an overall project.

[0076] Second, there need not be any limitation in installed height, since the stones are individually attached to the surface, preferably by driving nails, screws, or other fastening devices through the fasteners of the invention. By eliminating height restrictions, the present invention opens markets for installation of stone that have hitherto been unavailable with prior art manufactured stone.

[0077] Third, the problem of falling stone is expected to be virtually eliminated. Because the stones are individually attached to the surface, again, preferably with screws, nails, or the like, these stones are securely attached to the surface. It is believed that even in the situation of an earthquake, the stones will not separate from the surface provided the surface remains intact.

[0078] Fourth, the present invention reduces or eliminates the need for special expertise in installation. Attaching the stones of the present invention with screws, for example, enables an ordinary layperson to install the stones, without having to hire a professional mason to do the work. This again reduces the cost of installation and opens new markets for manufactured stone.

[0079] The new fastening techniques of the present invention further eliminate many of the installation steps required with prior art manufactured stone. For instance, there is no need to fasten a metal lath to a surface, nor is there a need for a scratch coat of mortar to be applied to the metal lath. Time is not needed to allow the curing of the scratch coat prior to installation. The back sides of the manufactured stones need not be “buttered” with mortar to attach them to the surface. By eliminating the mortar used in the prior art to attach the stones to a surface, the present invention reduces the time and care needed to prevent smears of mortar on the stone being installed or mortar falling on previously-installed stones. It is further not needed to clean the mortar off the stones to enable proper grouting. In instances where a “dry stack” of stone is being installed, there is no need for the lengthy process of grouting between the joints, allowing the grout to dry, and striking the joints. There is also no need to brush the joints for loose mortar. Eliminating these steps greatly reduces the labor required for installation.

[0080] While several embodiments of the invention have been illustrated and described, it will be appreciated that
various changes can be made therein without departing from the spirit and scope of the invention. The present invention includes methods and material not specifically illustrated herein, but which accomplish the same purposes of the invention. For example, the present invention contemplates using any kind of material for a fastener that is embedded or securely attached in some way to the manufactured stone to allow the stone to be fastened to a surface. The particular stone designs described herein are not limiting on the invention. Accordingly, the scope of the invention should be determined from the following claims and equivalents thereto.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A manufactured stone, comprising:
   (a) a manufactured material formed to make the body of the manufactured stone; and
   (b) a fastener affixed to the manufactured material, the fastener being dimensioned for a fastening device to attach the fastener to a surface, thereby attaching the manufactured stone to the surface.

2. The manufactured stone of claim 1, in which the fastener is made of metal.

3. The manufactured stone of claim 2, in which the fastener is made of a strip ofsheet metal.

4. The manufactured stone of claim 1, in which the fastener is made of plastic.

5. The manufactured stone of claim 1, in which a portion of the fastener is embedded in the manufactured material of the manufactured stone to affix the fastener to the manufactured stone.

6. The manufactured stone of claim 1, in which the fastener is affixed to the manufactured stone by bonding the fastener to the manufactured material of the manufactured stone.

7. The manufactured stone of claim 1, in which the fastener is made for the fastening device to be driven through the fastener into the surface to attach the manufactured stone to the surface.

8. The manufactured stone of claim 7, in which the fastening device is a nail.

9. The manufactured stone of claim 7, in which the fastening device is a screw.

10. The manufactured stone of claim 1, in which the fastening device is a bonding material that bonds the fastener to the surface.

11. The manufactured stone of claim 1, in which the fastener includes a flange portion extending from the manufactured stone, the flange portion being dimensioned to be inserted behind an adjacent stone when attaching the manufactured stone to the surface.

12. A method of installing manufactured stone on a surface, comprising:
   (a) providing a manufactured stone formed of a manufactured material and a fastener affixed to the manufactured material, the fastener being dimensioned for a fastening device to attach the fastener to the surface; and
   (b) attaching the manufactured stone to the surface by applying the fastening device to the fastener of the manufactured stone.

13. The method of claim 12, in which affixing the fastener to the manufactured material includes embedding a portion of the fastener in the manufactured material.

14. The method of claim 12, in which affixing the fastener to the manufactured material includes bonding a portion of the fastener to the manufactured material.

15. The method of claim 12, in which attaching the manufactured stone to the surface includes driving the fastening device through the fastener into the surface.

16. The method of claim 15, in which a nail is driven through the fastener into thesurface.

17. The method of claim 15, in which a screw is driven through the fastener into the surface.

18. The method of claim 12, in which attaching the manufactured stone to the surface includes applying a bonding material to the fastener which bonds the fastener to the surface.

19. The method of claim 11, in which the fastener includes a flange portion extending from the manufactured stone, the method further including inserting the flange portion behind an adjacent previously-installed stone prior to attaching the manufactured stone to the surface.

20. A fastener for attaching a manufactured stone to a surface, comprising:
   (a) a first portion that is affixed to the manufactured stone; and
   (b) a second portion that is connected to the first portion and dimensioned for a fastening device to attach the second portion to the surface, thereby attaching the manufactured stone to the surface.

21. The fastener of claim 20, in which the first portion of the fastener is embedded in the manufactured stone to affix the fastener to the manufactured stone.

22. The fastener of claim 20, further comprising a tab connected to the first portion that extends outward from the fastener into the manufactured stone.

23. The fastener of claim 20, further comprising a hole in the first portion dimensioned to permit a portion of the manufactured stone to extend therethrough when the manufactured stone is being made.

24. The fastener of claim 20, further comprising a hole in the second portion dimensioned to permit the fastening device to extend therethrough into the surface.

25. The fastener of claim 20, in which the first portion of the fastener is in a different plane than the second portion of the fastener, the second portion being raised from the plane of the first portion.

26. The fastener of claim 20, further comprising a flange portion that extends from the manufactured stone, the flange portion being dimensioned for insertion behind an adjacent stone when attaching the manufactured stone to the surface.