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(54) CONCRETE BLOCK FOR FORMING COLUMNS

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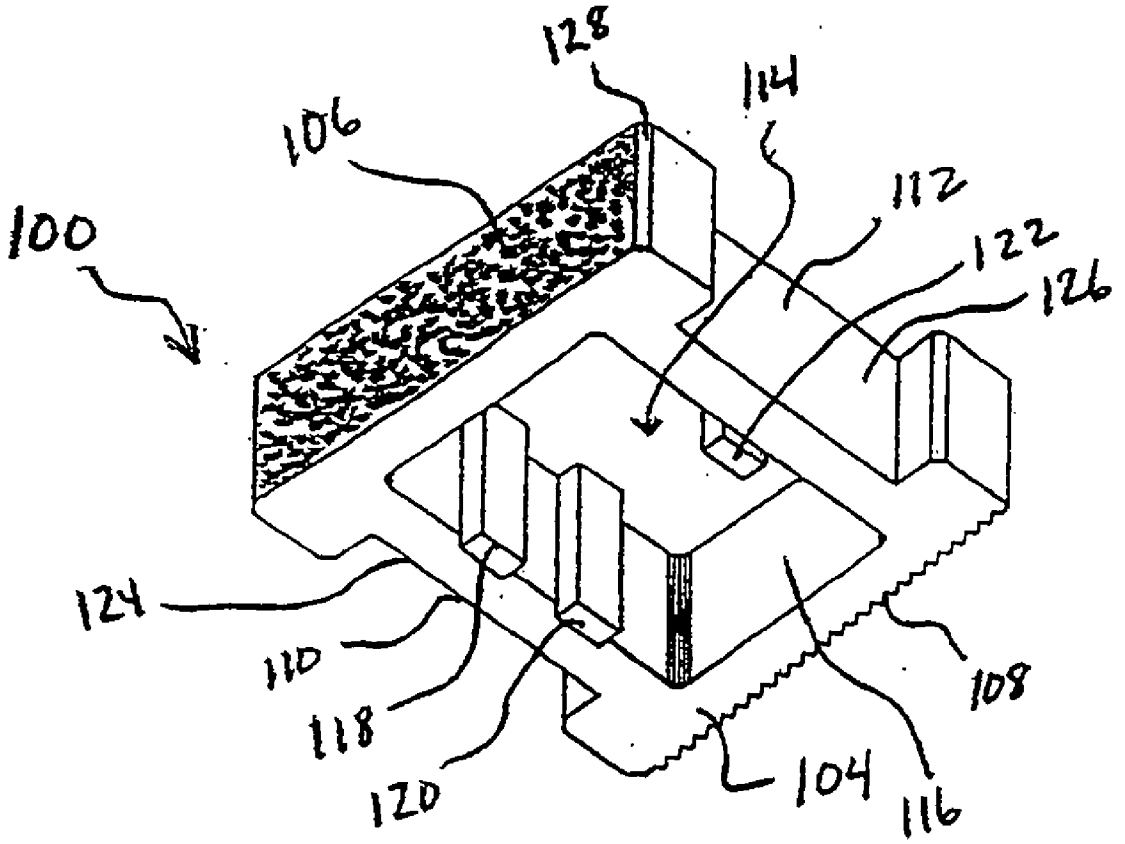
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(57) **ABSTRACT**

A modular post block may include a core through the block body and three interlocking portions disposed on the inner perimeter surface of each block that project outward from one of the bottom surface or the top surface of each block. First and second interlocking portions are disposed on one surface of the inner perimeter and third interlocking portion is disposed on the opposite side. Blocks can be stacked in a column by horizontally rotating each successive block 180 degrees. Interlocking portions of a first block then project into the core of a second block and the third interlocking portion of the first block fits at least partially between two interlocking portions of the adjacent second block.



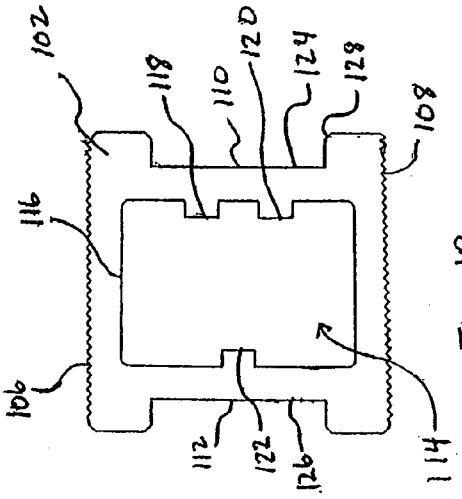


Fig. 1B

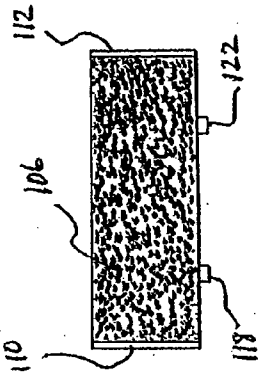


Fig. 1D

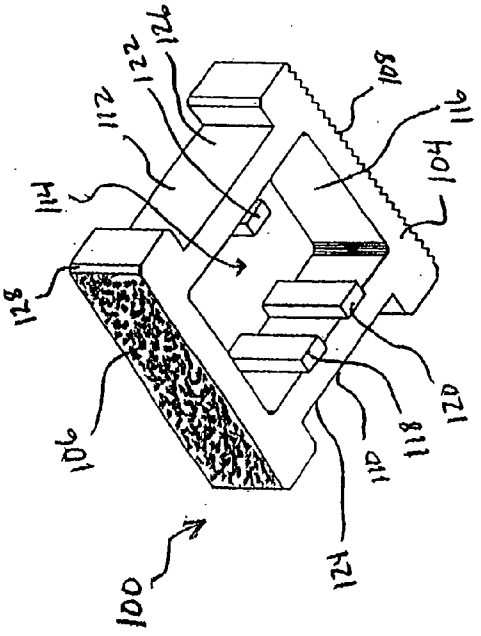


Fig. 1A

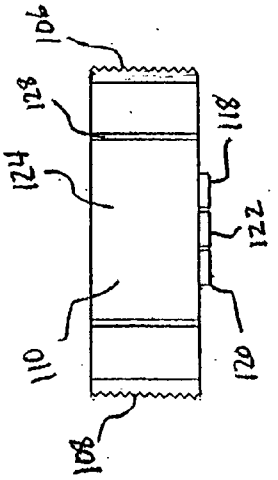


Fig. 1C

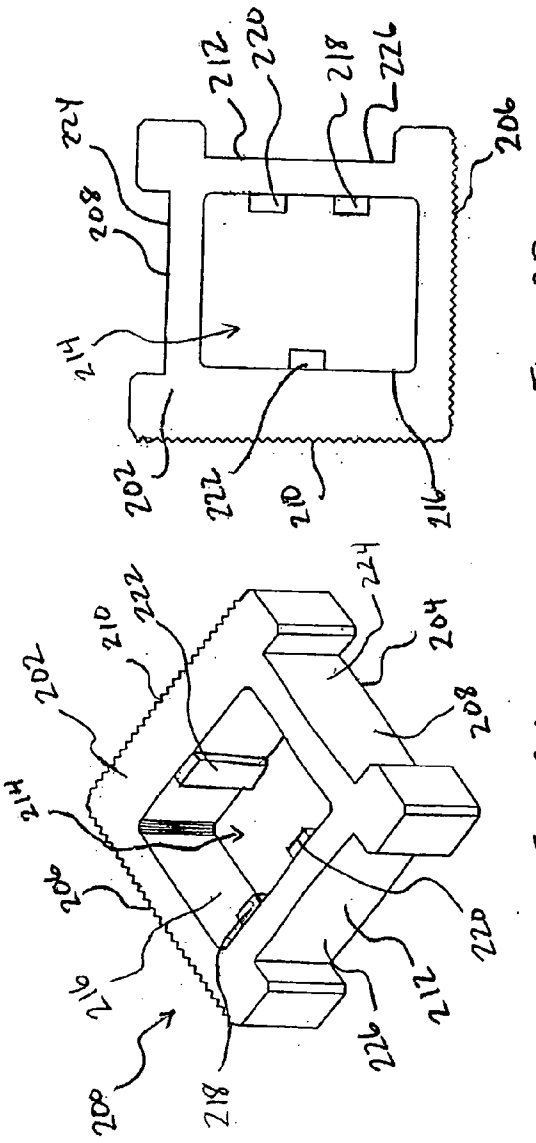


Fig. 2B

Fig. 2A

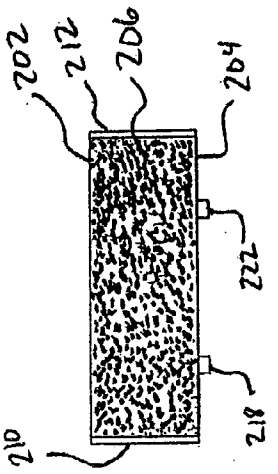


Fig. 2D

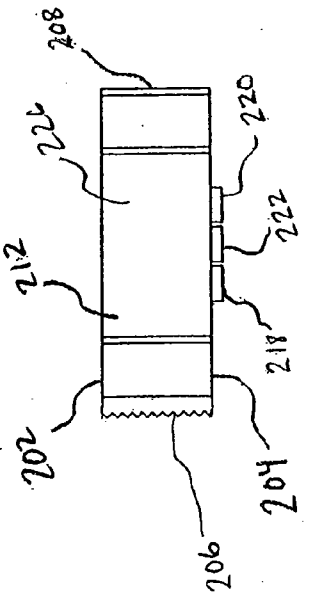


Fig. 2C

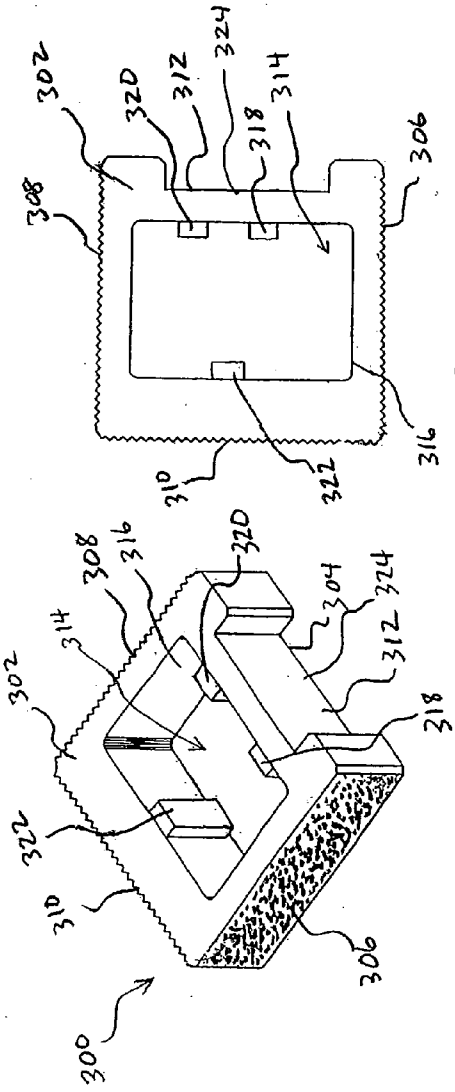


Fig 3A

Fig 3B

Fig 3C

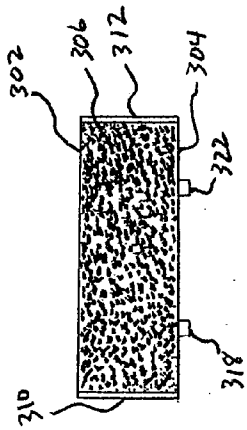


Fig 3D

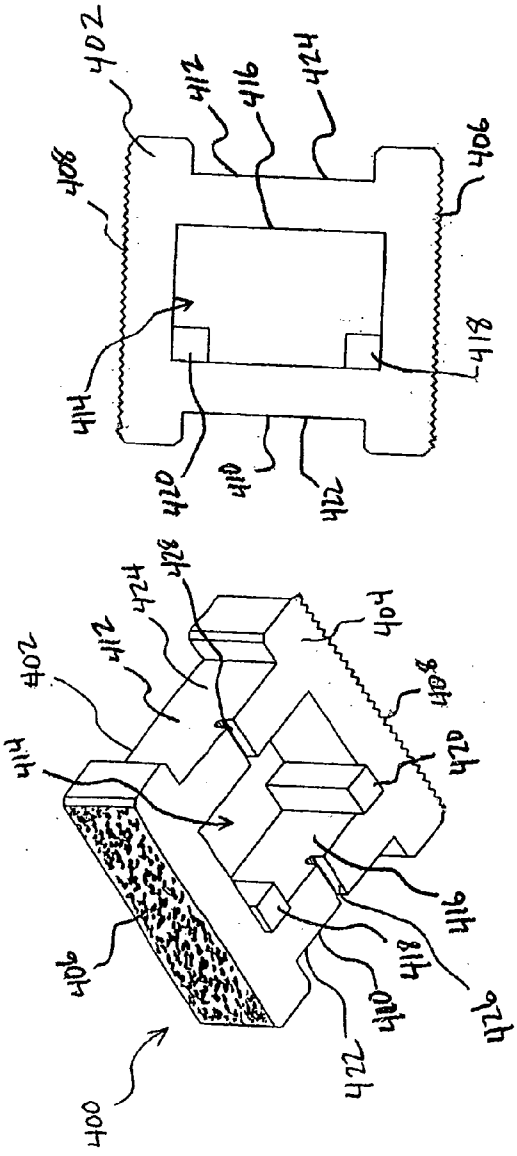


Fig. 4A

Fig. 4B

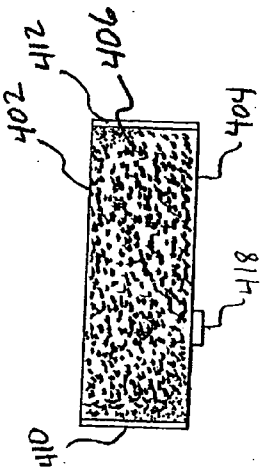


Fig. 4D

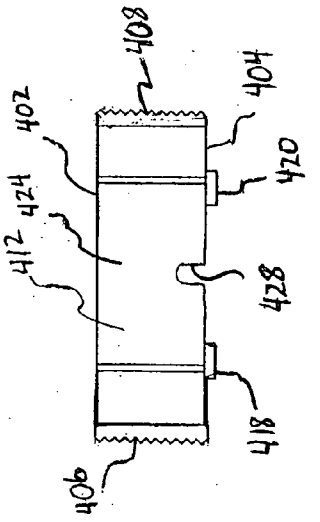


Fig. 4C

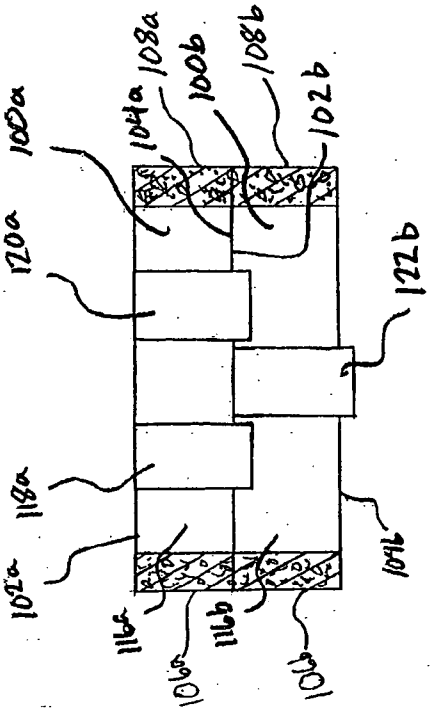

100a
104a
108a
100b
108b
102b
120a
122b
118a
107a
116a
116b
101a
101b
101

Fig. 5B

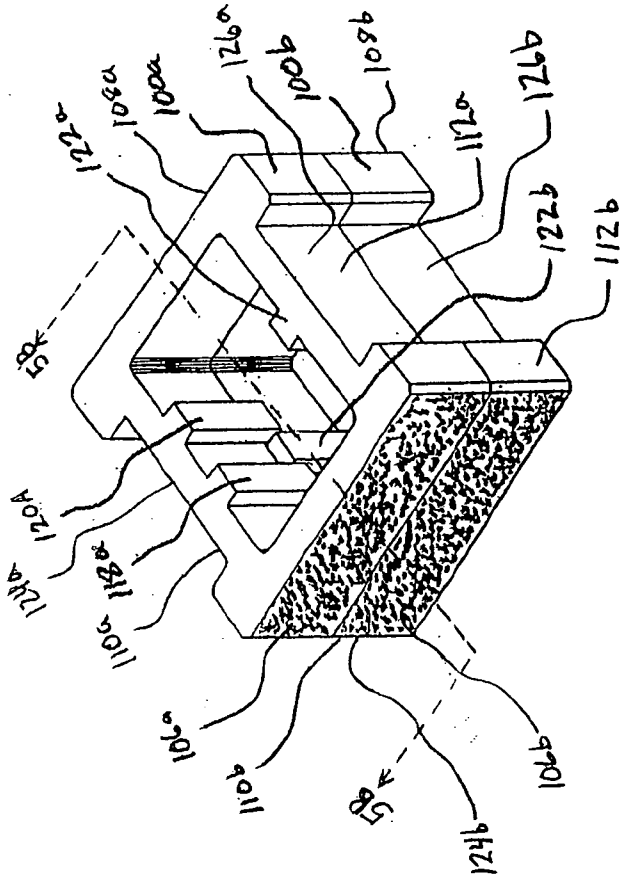

126a
100b
104b
122a
100a
104a
118a
122b
112b
5B
120a
112a
110a
110b
101c
101d
5B
124b
101e

Fig. 5A

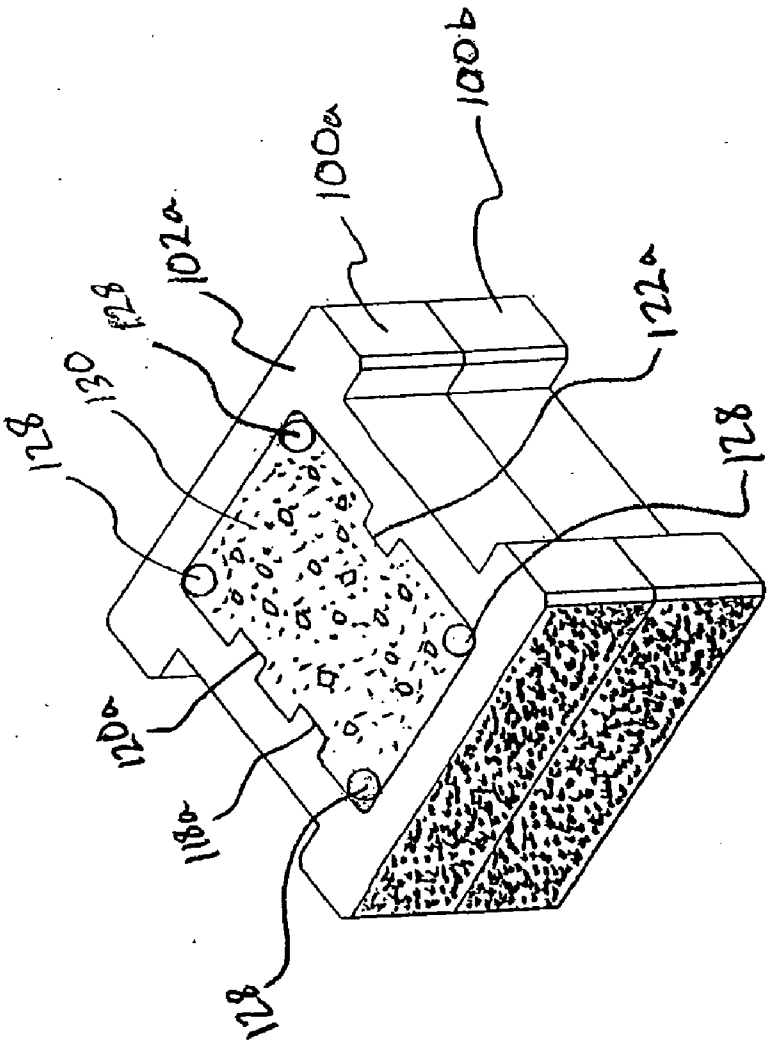


Fig. 6

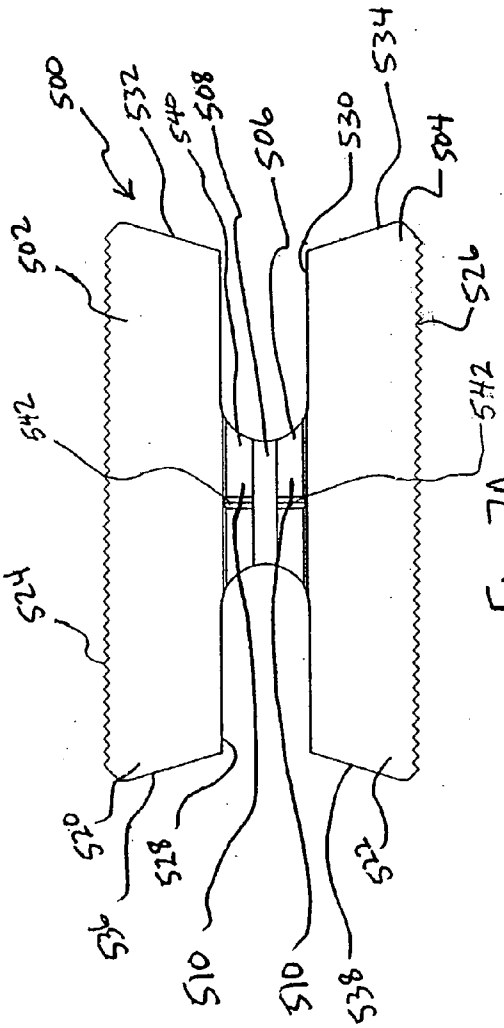


Fig. 7A

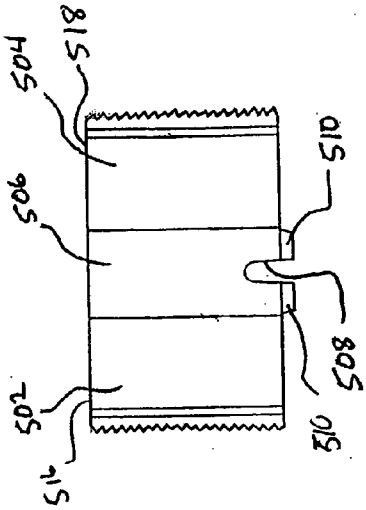


Fig. 7C

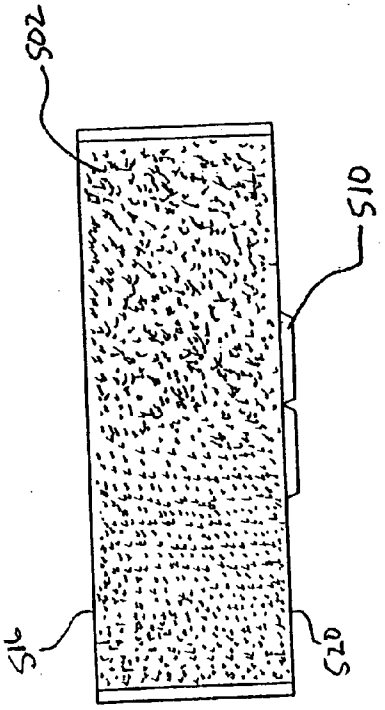


Fig. 7B

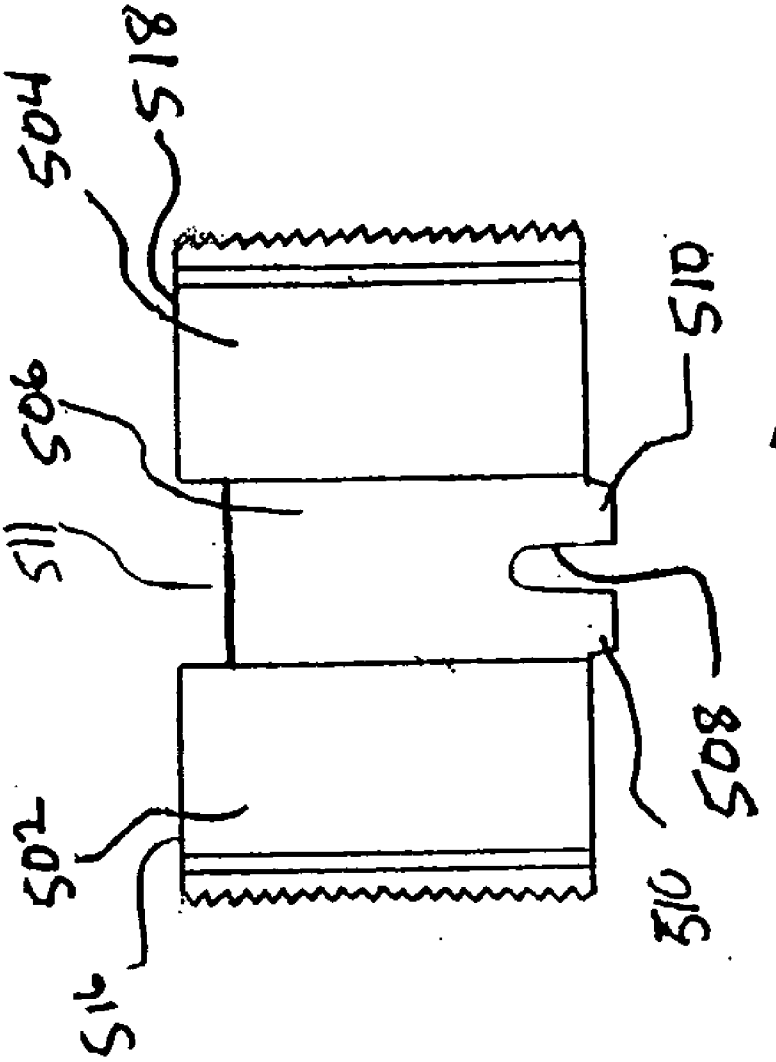


Fig. 7D

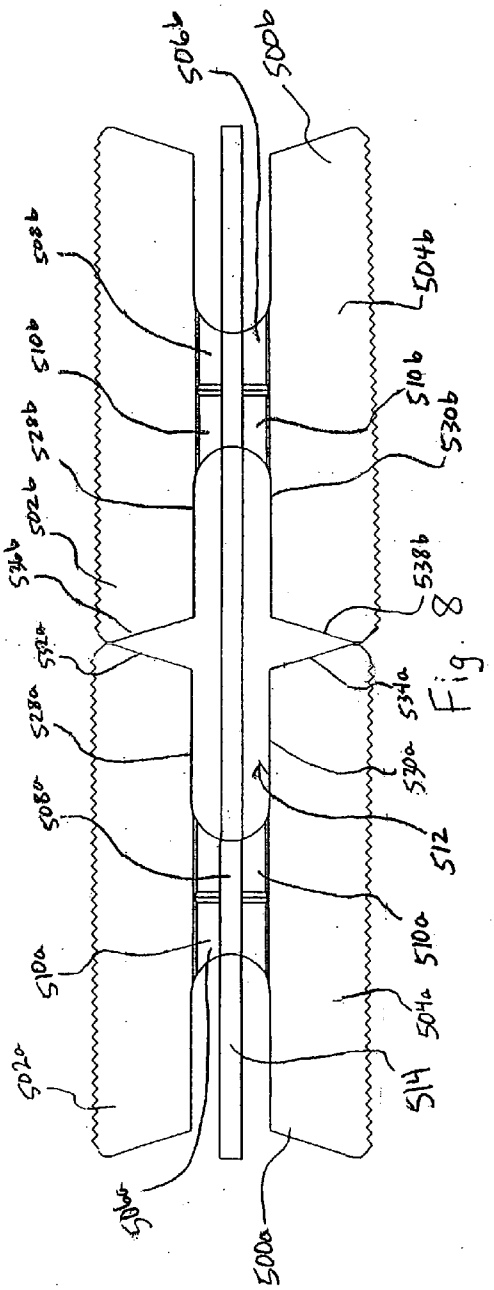

504b
500b
508b
510b
528b
526b
536b
532b
538b
530b
506b
534b
520b
512
510a
504a
514
502a
508a
500a

Fig. 8

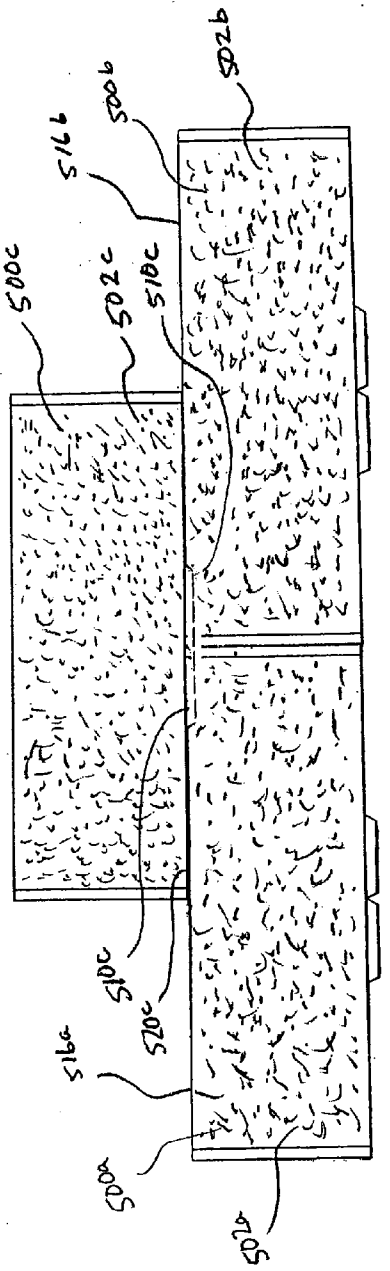

504b
500b
516b
502b
500c
502c
510c
516c
510c
520c
516a
508a
502a

Fig. 9

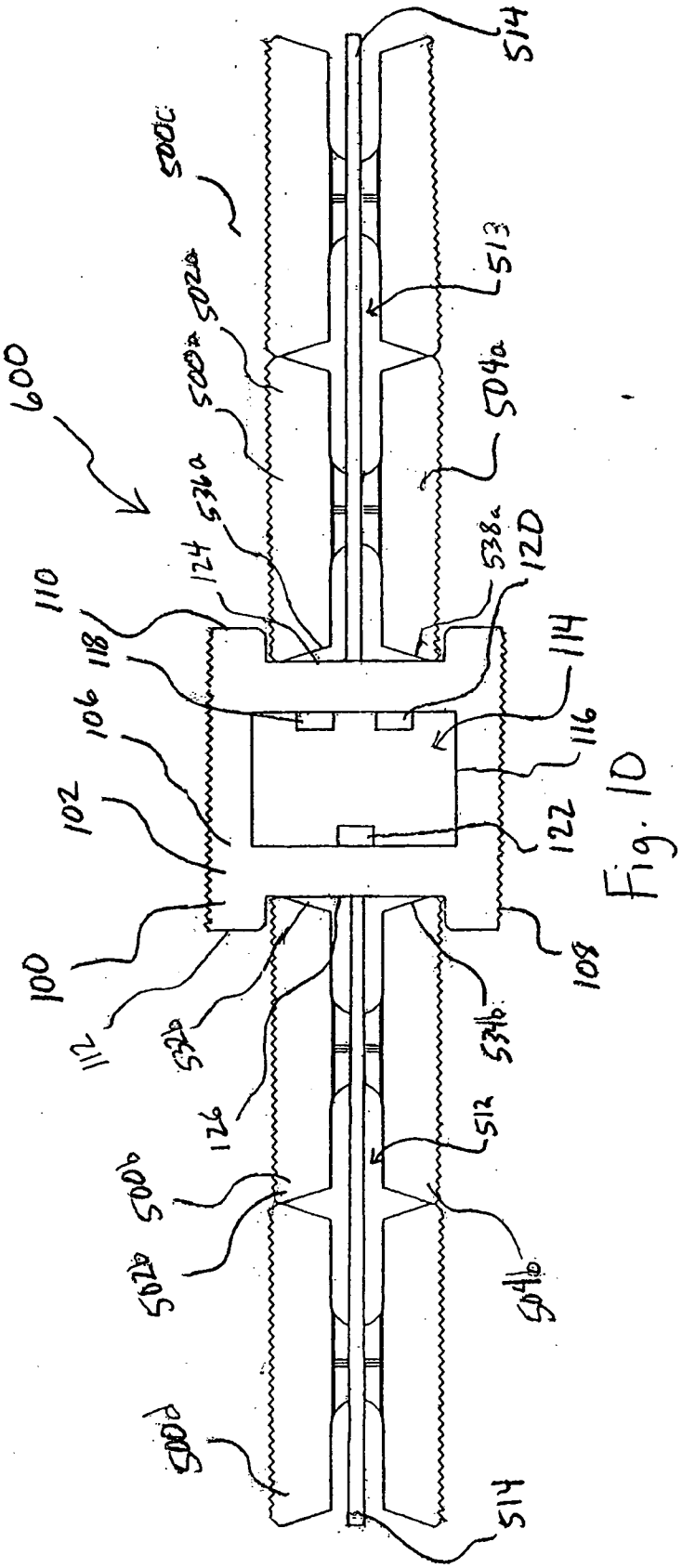

600
110
118
106
102
100
112
526
524
121
505
504
514
513
504a
538a
120
124
114
116
122
108
538b
512
504b
514

Fig. 10

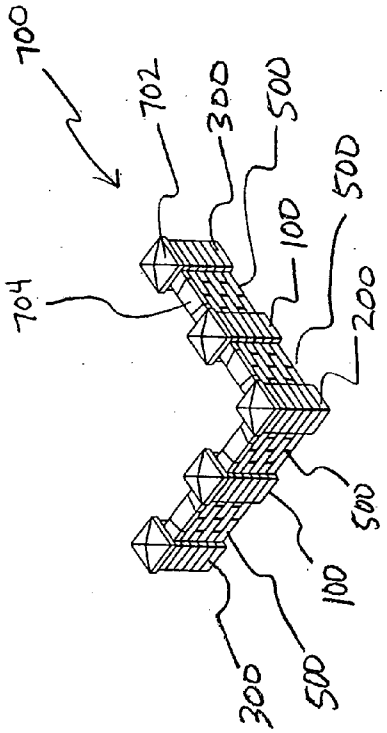


Fig. 11A

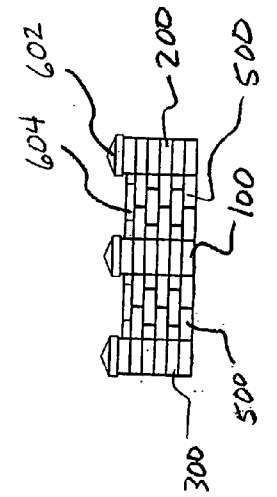


Fig. 11C

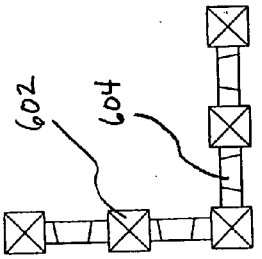


Fig. 11B

CONCRETE BLOCK FOR FORMING COLUMNS

FIELD OF THE INVENTION

[0001] The present invention relates generally to stackable concrete blocks and more particularly to an interlocking stackable concrete block for forming columns that are part of a modular wall system.

BACKGROUND OF THE INVENTION

[0002] Block wall systems are often used for privacy, security, decoration or as support for fence panels, gates, or other such structures. Such systems are desirable because they provide an aesthetically pleasing appearance, resist weathering, and require little maintenance. The construction of such a wall, however, can be expensive and time-consuming.

[0003] Conventionally, such walls were constructed using mortared masonry blocks. However, construction of such wall systems requires labor intensive building techniques that generally must be performed by skilled personnel.

[0004] Modular blocks with interlocking features have also been used to build block wall systems and can be installed without special skill. For example, U.S. Patent Pub. No. 2005/0252147 and 2005/0252146, each to MacDonald et al., disclose a column block and fence system where successive blocks can be placed upon one another and interlock by rotating each block 90 degrees. However, when used with wall blocks to construct a fence system, numerous variations of the blocks are required so that the recessed portions for receiving the wall blocks are aligned in each column. This increases the cost of manufacturing, palletizing, and inventory for the manufacturer and increases cost and makes installation more difficult for the end user. In addition, the interlocking features take up much of the hollow interior region of the blocks, leaving little space in which to place reinforcing materials. While a single pole may be placed through the center of the blocks this does not provide as much support for the column as multiple, spread out reinforcement members. Further, the MacDonald et al. block system leaves little or no remaining space in the core for additional materials to be added, such as cement.

[0005] Other block wall systems, for example, U.S. Pat. No. 5,623,797 to Gravier et al., interlock by means of upwardly protruding laterally extending ridge projections which mate and interlock with projections formed on the bottom surface of the block. This interlocking configuration increases the complexity and expense of manufacture because core pulling techniques are used to manufacture the disclosed design when using dry-cast manufacturing methods. In addition, the Gravier et al. dual ridge projection design limits the methods by which a decorative face may be imparted to the front surface of the blocks using dry-cast manufacturing methods because certain techniques for imparting a decorative face may damage the ridges. Further, universal flat-bottomed caps and natural stone blocks cannot be used as cap blocks due to the presence of the ridges. Therefore, specially configured cap blocks are required.

SUMMARY OF THE INVENTION

[0006] The present interlocking modular wall system provides advantageous reinforcement capability and can be manufactured and installed for a minimum of cost. Moreover, it addresses certain disadvantages of conventional systems.

[0007] The interlocking modular wall system includes modular post blocks. Modular post blocks according to an embodiment of the present invention include a core through the block body and three interlocking portions disposed on the inner perimeter surface of each block that project outward from one of the bottom surface or the top surface of each block. First and second interlocking portions are disposed on one surface of the inner perimeter and third interlocking portion is disposed on the opposite side. A column of post blocks can be formed by horizontally rotating each successive block 180 degrees. When stacked, interlocking portions of a first block project into the core of a second block and the third interlocking portion of the first block fits at least partially between first and second interlocking portions of the adjacent second block. Reinforcement members may be added through the vertically aligned cores of a column of blocks. Modular post blocks can be configured to serve as corner post blocks, end post blocks, or middle post blocks such that a wall of any shape can be created.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The invention may be more completely understood in consideration of the following detailed description of various embodiments of the invention in connection with the accompanying drawings, in which:

[0009] FIG. **1**A is a perspective view, FIG. **1**B is a top view, FIG. **1**C is a side view, and FIG. **1**D is a front view of a modular post block according to an embodiment of the present invention.

[0010] FIG. **2**A is a perspective view, FIG. **2**B is a top view, FIG. **2**C is a side view, and FIG. **2**D is a front view of a modular post block according to an embodiment of the present invention.

[0011] FIG. **3**A is a perspective view, FIG. **3**B is a top view, FIG. **3**C is a side view, and FIG. **3**D is a front view of a modular post block according to an embodiment of the present invention.

[0012] FIG. **4**A is a perspective view, FIG. **4**B is a top view, FIG. **4**C is a side view, and FIG. **4**D is a front view of a modular post block according to an embodiment of the present invention.

[0013] FIG. **5**A is a perspective view and FIG. **5**B is a cross sectional view of two modular post blocks stacked on top of each other according to an embodiment of the present invention.

[0014] FIG. **6** is a perspective view of two modular post blocks stacked on top of each other according to an embodiment of the present invention.

[0015] FIG. **7**A is a bottom view, FIG. **7**B is a front view, and FIG. **7**C is a side view of a modular wall block according to an embodiment of the present invention.

[0016] FIG. **7**D is a side view of a modular wall block according to an embodiment of the present invention.

[0017] FIG. **8** is a bottom view of two modular wall blocks stacked against one another according to an embodiment of the present invention.

[0018] FIG. **9** is a front view of three modular wall blocks stacked together according to an embodiment of the present invention.

[0019] FIG. **10** is a top view of a modular wall section according to an embodiment of the present invention.

[0020] FIG. **11**A is a perspective view, FIG. **11**B is a top view, and FIG. **11**C is a front view of a modular wall system according to an embodiment of the present invention. **1**

DETAILED DESCRIPTION

[0021] Referring to FIGS. **1**A-**1**D, a modular post block **100** according to an embodiment of the present invention is shown. Modular post block **100** comprises a top surface **102** and opposing bottom surface **104**, a front surface **106** and opposing rear surface **108**, and a first side surface **110** and opposing second side surface **112**. The surfaces of modular post block meet to form corners **128**, which may optionally be beveled, chamfered, or rounded to provide a more finished appearance. Modular post block **100** further includes an opening or core **114** through the center of the block body. A core should be understood to be an opening through the block body that is bounded by the block body. An opening should be understood to be any open or void area. Core **114** defines an inner perimeter surface **116** of the block. The core **114** extends the entire thickness of the block in order to reduce the weight of the block for ease of assembly and to allow for the placement of vertical reinforcement in a column of modular post blocks. In addition, it is simpler to manufacture modular post blocks **100** with cores **114** extending completely through the block. However, core **114** may extend from top surface **102** or bottom surface **104** and stop short of the opposing surface.

[0022] First **118**, second **120**, and third **122** interlocking portions are disposed on inner perimeter surface **116** of modular post block **100**. Third interlocking portion **122** is disposed on the surface opposite from first **118** and second **120** interlocking portions. Interlocking portions **118**, **120**, **122** project or extend beyond bottom surface **104** of modular post block **100** and are co-planar with top surface **102**, however interlocking portions **118**, **120**, **122** can be manufactured such that the reverse is true. Alternatively, interlocking portions need not extend the entire thickness of the block, and therefore need not be co-planar with one of the surfaces, so long as they project beyond the other surface. First **118** and second **120** interlocking portions are spaced such that the distance between them is slightly wider than the width of third interlocking portion **122**. Although depicted as having a square or rectangular cross-section, persons of skill in the art will recognize that interlocking portions **118**, **120**, **122** can take on a variety of shapes, including arcuate, triangular, polygonal or circular. Interlocking portions **188**, **120**, **122** may also be tapered so that the portion protruding beyond the bottom surface **104** of the block **100** narrows as it gets farther away from bottom surface **104**. This will facilitate easy stacking and manufacturing. Further, persons of skill in the art will recognize that any number of interlocking portions may be used. For example, **3** interlocking portions may be provided on one side and **2** provided on the opposite side.

[0023] The embodiment depicted in FIGS. **1**A-**1**D shows a post block **100** for use in a middle portion of a wall such that corresponding wall blocks may extend out from both the first side surface **110** and second side surface **112**. As such, first side surface **110** is provided with a first recess **124** and second opposing side surface **112** is provided with a second recess **126** for receiving said wall blocks.

[0024] The outer surfaces of all of the blocks according to the present invention may be given a decorative appearance. Such decorative appearances include broken rock, stacked rocks, natural stone, brick, striated or roughened texture. Persons of skill in the art of concrete block manufacturing using the dry-cast process will recognize that various decorative appearances can be imparted on one or more of the surfaces of the blocks, and that the present invention is not limited to a specific decorative facial appearance unless specifically indicated in a given Claim. Decorative faces for the block depicted in FIGS. **1**A-**1**D are provided to the front surface **106** and the opposing rear surface **108**. Alternatively, one or more outer surfaces may provided with a smooth appearance.

[0025] Depicted in FIGS. **2**A-**2**D is a modular post block **200** according to an embodiment of the present invention. This embodiment **200** is for use at the corner of a modular wall block system. Similar to modular post block **100**, modular post block **200** is defined by a top surface **202** and opposing bottom surface **204**, a front surface **206** and opposing rear surface **208**, and a first side surface **210** and opposing second side surface **212**. Modular post block **200** also includes a core **214** defining an inner perimeter surface **216** which has first **218**, second **220**, and third **222** interlocking portions formed thereon that extend beyond bottom surface **104** and where the space between first **118** and second **120** interlocking portions is slightly greater than the width of third interlocking portion **122**. However, because modular post block **200** is located on the corner of the wall the location of the recesses **224**, **226** is different than with modular post block **100**. Where a post block is in the corner of a wall, the corresponding wall blocks will extend from adjacent, rather than opposite, sides of the block. Therefore, modular post block **200** is provided with recesses **224**, **226** on rear surface **208** and second side surface **212**. Decorative faces can be provided to front surface **206** and first side surface **210**. Persons of skill in the art will recognize that the recess **226** provided on second side surface **212** could instead be provided on first side surface **210** and a decorative face could then be provided on second side surface **212**.

[0026] In order to create an interlocking column of modular corner post blocks, a mirror-image of the above-described block is provided to stack with modular post block **200**. The mirror image block has the interlocking portions **218**, **220**, **222** reversed, such that two interlocking portions **218**, **220** are provided on inner perimeter surface **216** near first side surface **210** and one interlocking portion is provided on the opposite side. Modular post block **200** and its corresponding mirror image block would be stacked in courses to provide a uniform column.

[0027] Referring now to FIGS. **3**A-**3**D, there can be seen a modular post block **300** according to an embodiment of the present invention. This embodiment **300** is for use on an end of a modular wall block system. Similar to the above, modular post block **300** comprises a top surface **302** and opposing bottom surface **304**, a front surface **306** and opposing rear surface **308**, and a first side surface **310** and opposing second side surface **312**. Modular post block **300**

also includes a core **314** defining an inner perimeter surface **316** which has first **318**, second **320**, and third **322** interlocking portions formed thereon that extend beyond bottom surface **304** and where the space between first **318** and second **320** interlocking portions is slightly greater than the width of third interlocking portion **322**. Only one recess **324** is provided because a block positioned at the end of a wall will have wall blocks extending from only one side of it. Although provided on second side surface **312** in FIGS. **3**A-**3**D, recess **324** could also be located on first side surface **310** or rear surface **308**. All three surfaces not provided with a recess **306**, **308**, **310** may be provided with a decorative face. As discussed with modular post block **200**, a corresponding mirror image modular post block is provided, wherein the interlocking portions **318**, **320**, **322** are reversed in order to create a uniform interlocking column with aligned recesses. Modular post block **300** and mirror image block are then alternated in the column when stacked in courses.

[**0028**] Referring now to FIGS. **4**A-**4**D, a modular post block **400** is shown which depicts certain variations of the present invention. Modular post block **400** comprises a top surface **402** and opposing bottom surface **404**, a front surface **406** and opposing rear surface **408**, and a first side surface **410** and opposing second side surface **412**. Modular post block **400** further includes a core **414** through its center defining an inner perimeter surface **416**. First **418** and second **420** interlocking portions are located on inner perimeter surface **416** and extend below bottom surface **404** while remaining flush with top surface **402**.

[**0029**] Modular post block **400** further includes first **426** and second **428** horizontal reinforcement bar slots in bottom surface **404**. Horizontal reinforcement bar slots **426**, **428** are designed to receive reinforcement members in order to provide further support and reinforcement to modular post blocks and corresponding wall blocks. Various types of horizontal reinforcement members are known in the art, including rebar, rods, and poles. Although interlocking portions **418**, **420** are shown disposed at the corners of inner perimeter surface **416**, they may be located elsewhere along inner perimeter surface **416**. If they are located in front of horizontal reinforcement bar slots **426**, **428**, then they will also be provided with a recess to accept reinforcing members. Also, recesses **422**, **424** in the first **410** and second **412** side surfaces of the block could be relocated to provide for a corner post block or an end post block. Additional recesses are also contemplated to provide for more then one reinforcement member.

[**0030**] Referring now to FIGS. **5**A and **5**B, interlocking courses of post blocks are formed by stacking the blocks **100***a*, **100***b* on each other and rotating each successive block 180 degrees. Interlocking portions **118**, **120**, **122** substantially lock the blocks into place, which adds stability to a column of stacked blocks **100***a*, **100***b*.

[**0031**] In use, interlocking portions **118***a*, **120***a*, **122***b* extend below the surface of each block and into the opening or core of an underlying block. Interlocking portions **118***a*, **120***a* fit generally against inner perimeter surface **116***b* of the underlying block so that shearing forces applied to the sides **110***a*, **112***a*, **110***b*, **112***b* of either block **100***a*, **100***b* will not substantially displace the blocks relative to each other. Further, third interlocking portion **122***b* of the underlying block **100***b* fits between first **118***a* and second **120***a* interlocking portions of the overlying block **100***a* such that forces on the front **106***a*, **106***b* and rear **108***a*, **108***b* surfaces of either block **100***a*, **100***b* will not substantially displace the blocks relative to each other.

[**0032**] Because of the 180 degree rotation between blocks and the location of the interlocking portions, only one block design **100** is needed to create a column of blocks with aligned recesses **124***a*, **124***b* and **126***a*, **126***b*. Modular blocks of the present invention thus result in reduced cost to both the manufacturer and the end user and simplify the installation process. Multiple different block variations need not be manufactured, maintained in inventory, purchased, shipped and selected from during installation. Modular post blocks that are asymmetrical, such as corner post block **200** and end post block **300**, will require a second, mirror-image block variation in order to create an interlocking column with the recesses aligned. Alternatively, asymmetrical blocks may be provided without interlocking portions so that only one variation of each block is required in order to further reduce manufacturing costs and simplify the wall construction process.

[**0033**] As shown in FIG. **6**, a column of modular post blocks **100***a*, **100***b* may be further strengthened by providing reinforcement material into the cores of the blocks. Reinforcing the blocks is especially desirable with taller columns of blocks or where stability issues, such as high wind forces, are encountered. One method of reinforcement involves placing reinforcement members **128**, such as rebar, vertically downwards into the column at each of the four corners of the opening or core within the column. Although reinforcement members **128** may be placed anywhere within the core, the greatest strength is achieved by spacing the sections **128** as far apart as possible, which is in the corners. Enhanced strength can therefore be achieved by embodiments of the present invention because the interlocking portions leave the corners of the core unobstructed.

[**0034**] The opening in the column may also be filled with concrete **130** or other similar reinforcing material to provide further reinforcement and to hold the reinforcement members in place. The reinforcement members may also be lashed together. Alternatively, the opening in a column of blocks may be filled with cement **130** or other similar reinforcing material, but not with reinforcement members.

[**0035**] Because only a small area of the core is occupied by interlocking portions **118***a*, **120***a*, **122***a*, a large amount of area is available to be filled with cement **130** or other reinforcing material, maximizing the tipping strength and resistance of the column. In alternate embodiments, other reinforcing materials may be used, such as a pole, I-beam, steel pipe, or post-tension rods. Various other suitable reinforcing materials are known in the art.

[**0036**] Modular post blocks may be manufactured to any desired dimension. A preferred size for post blocks is about 18 inches square and about 6 inches tall. The depth of the recesses in the sidewalls to accommodate wall blocks is preferably about 2 inches inwards from the outer portions of the sidewalls. The width of the recess is preferably about 10.5 inches so that it can accommodate the width (thickness) of a wall block. The core or opening is preferably 10 inches side-to-side and 14 inches front-to-back. The interlocking portions preferably project 1 inch out from the inner perim-

eter surface and are 2 inches wide. Interlocking portions preferably extend about 0.625 inches beyond the surface of the block. The proportion of the area of the core to the area of the block is preferably about 0.9/1. Post blocks include a substantially open core which allows for substantial reinforcement to be added, while also retaining the required sufficient structural integrity to the block. Persons of skill in the art will recognize that all of these dimensions are merely preferred and that any one or more dimensions may be varied without departing from the spirit and scope of the present invention.

[0037] Referring to FIGS. **7**A-**7**C, a modular wall block **500** according to an embodiment of the present invention comprises a first portion **502**, a second portion **504**, and a transverse portion **506** that joins first portion **502** and second portion **504** together. First portion **502** and second portion **504** each comprise respective outer surfaces **524**, **526**, opposing inner surfaces **528**, **530**, top surfaces **516**, **518**, opposing bottom surfaces **520**, **522**, first side surfaces **532**, **534** and opposing second side surfaces **536**, **538**. Transverse portion **506** spans between the first **502** and second **504** portions at their respective inner surfaces **528**, **530**. Transverse portion **506** includes a horizontal reinforcement bar slot **508**, an interlocking extension **510** and a pair of splitter grooves **542** on its bottom surface **540**. The slot **508** bisects the extension **510** in a direction parallel to the width of the block. A splitting groove **542** is further provided to the extension **510** in order to assist in making partial-width or half blocks.

[0038] Wall blocks may be manufactured to any desired dimension. However, a preferred size for wall blocks is 18 inches long by 6 inches tall. The overall width of the wall block is approximately 10 inches with the transverse portion spanning about 2¾ inches between the first and second portions. The interlocking extension preferably extends about ⅜ inch beyond the outer surface of wall block. The slot is preferably 1½ inches deep from the outer limit if the interlocking extension (1⅛ inch from the block surface). The slot is preferably deep enough to allow the reinforcement member to be located within the boundary of the block's outer surface on the side having the interlocking portion. Alternatively as shown in FIG. **7**D, the wall blocks may be provided with a recess **511** in the transverse portion in the surface opposite the interlocking portion so that the reinforcement member can be located partially or wholly within the boundary of the block's outer surface on the side opposite the interlocking portion. The recess depth is slightly greater than the dimension of the extension of the interlocking extension, such as ½ inch. In the latter alternatives, the slot depth may be shallower as needed to maintain the reinforcement member at the desired location.

[0039] FIG. **8** and FIG. **9** depict modular wall blocks **500***a*, **500***b*, **500***c* interlocking with one another. Along a single course, modular wall blocks **500***a*, **500***b* are laid side by side such that first side surfaces **532***a*, **534***a* of a first wall block **500***a* abut second side surfaces **536***b*, **538***b* of a second wall black **500***b*. A cavity **512** is defined by the inner surfaces **528***a*, **528***b*, **530***a*, **530***b* and transverse portions **506***a*, **506***b* of the wall blocks **500***a*, **500***b*. A length of rebar **514**, or other horizontal reinforcement material, is inserted into the horizontal reinforcement bar slots **508***a*, **508***b* of wall blocks **500***a*, **500***b* for reinforcement. When blocks in a new course are added **500***c*, they are placed such that the bottom surface of the second course **520***c* rests on the top surfaces of the first course **516***a*, **516***b*. Upper block **500***c* is centered on the cavity **512** created by the two lower blocks **500***a*, **500***b*. Interlocking extensions **510***c* of the upper block **500***c* project down into the cavity **512**, thereby helping to hold the second course in place on top of the first course. This interlocking eliminates the need for mortar to join adjacent wall blocks together. Subsequent blocks in the second course and subsequent courses are added in a like manner.

[0040] Referring to FIG. **10**, there is a single course of a wall section **600** showing the interaction between a modular post block **100** and modular wall blocks **500***a*, **500***b*, **500***c*, **500***d*. First **500***a* and second **500***b* wall blocks rest within the first **124** and second **126** side recesses of modular post block **100** such that side surfaces **532***b*, **534***b*, **536***a*, **538***a* of wall blocks **500***a*, **500***b* abut side surfaces **110**, **112** of modular post block **100**. Reinforcement members **514** are disposed in wall blocks **500***a*, **500***b*, **500***c*, **500***d* such that they sit flush up against side surfaces **110**, **112** in recesses **124**, **126**. Alternatively, where modular post blocks **400** such as those in FIGS. **4**A-**4**D are used, reinforcement members **514** will sit in horizontal reinforcement bar slots **426**, **428** in modular post blocks, forming one continuous bar through each straight section of the wall. Additional courses are added on top for both post blocks and wall blocks in the manner described above.

[0041] In order for wall blocks in the next overlying course to align properly such that interlocking extensions sit in the cavities **512**, **513** created by the wall blocks **500***a*, **500***b*, **500***c*, **500***d* in the underlying course, they must be shifted out from the next post block by half of a wall block. Half blocks can be provided to ensure this offset as is known in the art of block walls. Alternatively, half blocks may be created from whole blocks **500** because blocks **500** are provided with splitter grooves **542** to aid a user in splitting blocks apart, resulting in two half blocks.

[0042] Many different wall configurations can be made by combining modular post blocks **100**, **400**, corner modular post blocks **200**, end modular post blocks **300**, and wall blocks **500** of the present invention. FIGS. **11**A-**11**C depict one exemplary modular wall block system **700** according to an embodiment of the present invention. Modular wall block system **700** consists of a plurality of courses of blocks, utilizing post blocks **100**, corner post blocks **200**, end post blocks **300**, and wall blocks **500** to form a free standing wall. Any number of wall blocks **500** may be used between post blocks and any number of courses may be used. Modular wall block system **700** may be any size or shape and may utilize any combination of post blocks **100**, corner post blocks **200**, and end post blocks **300**.

[0043] Modular wall block system **700** may also include post cap blocks **702** and wall cap blocks **704** to cover the open areas of the blocks and to provide a finished appearance to the wall. Cap blocks **702**, **704** may come in any configuration including flat **704** and crowned **702**. Cap blocks **702**, **704** may be manufactured or may be blocks of natural stone. Cap blocks **702**, **704** may have a flat bottom surface and simply rest on top of post blocks **100**, **200**, **300** and wall blocks **500**. Adhesive can be used to secure the cap blocks to the top of the wall. Alternatively, post cap blocks **702** can have interlocking portions projecting therefrom similar to those described above for modular post blocks

100, **200**, **300**. Similarly, wall cap blocks **704** may be provided with interlocking portions such as those provided to wall blocks **500**.

[**0044**] Vertical reinforcement members, such as rebar or a post, may also be used to anchor the wall system **700** to the ground or other base or foundation on which the wall sits. Vertical reinforcement members may be directly embedded into the ground. Alternatively, post blocks may rest on concrete foundations, as is known in the art. Where post blocks rest on a concrete foundation, vertical reinforcement members may be threaded into the concrete foundation to anchor the wall.

[**0045**] The modular post blocks and wall blocks of the present invention are preferably made from a rugged, weather resistant material, such as concrete, for high strength and durability in outdoor applications. However, modular post blocks may be made of numerous other materials, for example, plastic, fiberglass, wood, metal, or stone. Modular post and wall blocks are most preferably manufactured using the so called dry-cast manufacturing method known in the art. The material composition for such process generally comprises sand, aggregate, cement, fly ash and, optionally, selected admixtures. Persons having skill in the art of dry-cast concrete block manufacture understand that material mixtures can be varied to meet a variety of performance requirements.

[**0046**] Persons of skill in the art will recognize that by providing a post block and/or wall block design that can be manufactured with at least one of a flat top or bottom surface, the manufacturing process can be performed more easily, quickly and inexpensively using dry-cast manufacturing methods, when compared to designs that do not have at least one of a flat top or bottom surface. These advantages are due, at least in part, to the fact that core pulling need not be performed to form relief in the block surface opposite the compression head. However, in the alternative embodiment wherein wall blocks may be provided with a recess in the transverse portion in the surface opposite the interlocking portion, core pulling can be used to provide the recess.

[**0047**] Although the present invention has been described with reference to preferred embodiments, workers skilled in the art will recognize that changes may be made in form and detail without departing from the spirit and scope of the invention.

What is claimed is:

1. A concrete block for constructing a vertical column of blocks, the block comprising:

a top surface;

a bottom surface spaced apart from the top surface and defining a thickness of the block;

a first side surface extending between the top surface and the bottom surface, the first side surface having a decorative texture;

a second side surface extending between the top surface and the bottom surface, the second side surface having a recess defined therein;

a third side surface extending between the top surface and the bottom surface, the third side surface opposing the first side surface;

a fourth side surface extending between the top surface and the bottom surface, the fourth side surface opposing the second side surface;

an inner perimeter surface defining a core within the block, the core extending through the entire thickness of the block from the top surface through the bottom surface; and

first, second and third interlocking portions, each extending beyond one of the top surface or bottom surface of the block, the first and second interlocking portions generally located on opposite portions of the inner perimeter surface of the block from the third interlocking portion.

2. The concrete block of claim 1, wherein the core comprises an open area bounded by the inner perimeter surface that is at least 80% as large as a block area defined by the area bounded by the first, second and third side surfaces.

3. The concrete block of claim 1, wherein the third side surface has a decorative texture.

4. The concrete block of claim 1, wherein the fourth side surface has a decorative texture.

5. The concrete block of claim 1, wherein the third and fourth side surfaces have decorative textures.

6. The concrete block of claim 1, wherein the third side surface has a recess defined therein.

7. The concrete block of claim 1, wherein the fourth side surface has a recess defined therein.

8. The concrete block of claim 1, further comprising a reinforcement bar slot defined in the block body.

9. A concrete block for constructing a vertical column of blocks, the block comprising:

a block body comprising:

a top surface;

a bottom surface spaced apart from the top surface and defining a thickness of the block;

a first side surface extending between the top surface and the bottom surface, the first side surface having a decorative texture;

a second side surface extending between the top surface and the bottom surface, the second side surface having a recess defined therein;

a third side surface extending between the top surface and the bottom surface, the third side surface opposing the first side surface;

a fourth side surface extending between the top surface and the bottom surface, the fourth side surface opposing the second side surface;

an inner perimeter surface defining a core within the block, the core extending through the entire thickness of the block from the top surface through the bottom surface; and

means for interlocking the block body with a second block in an adjacent course.

10. A concrete block for constructing a vertical column of blocks, the block comprising:

a block body comprising:

a top surface;

a bottom surface spaced apart from the top surface and defining a thickness of the block;

a first side surface extending between the top surface and the bottom surface, the first side surface having a decorative texture;

a second side surface extending between the top surface and the bottom surface, the second side surface having a recess defined therein;

a third side surface extending between the top surface and the bottom surface, the third side surface opposing the first side surface;

a fourth side surface extending between the top surface and the bottom surface, the fourth side surface opposing the second side surface;

an inner perimeter surface defining a core within the block, the core extending through the entire thickness of the block from the top surface through the bottom surface, the core bound by each of the first, second, third and fourth side surfaces; and

at least three interlocking portions extending beyond one of the top surface or bottom surface of the block, the at least three portions configured to interlock the block with an adjacently stacked second block that is horizontally rotated by 180 degrees.

11. The concrete block of claim 10, wherein the at least three interlocking portions comprise first and second interlocking portions generally located on opposite portions of the inner perimeter surface of the block from a third interlocking portion.

12. The concrete block of claim 10, further comprising a reinforcement bar slot defined in the block body.

13. The concrete block of claim 10, wherein the core comprises an open area bounded by the inner perimeter surface that is at least 80% as large as a block area defined by the area bounded by the first, second and third side surfaces.

14. The concrete block of claim 13, wherein the core comprises an open area bounded by the inner perimeter surface that is at least 85% as large as a block area defined by the area bounded by the first, second and third side surfaces.

15. A column of concrete blocks comprising:

a first block;

a second block stacked upon the first block,

wherein each of the first and second blocks comprises:

a top surface;

a bottom surface spaced apart from the top surface and defining a thickness of the block;

a first, second, third and fourth side surface extending between the top surface and the bottom surface;

an inner perimeter surface defining a core within the block, the core extending through the entire thickness of the block from the top surface through the bottom surface; and

first, second and third interlocking portions, each extending beyond one of the top surface or bottom surface of the block, and

wherein the first and second interlocking portions of the first block extend at least partially into the core of the second block and the third interlocking portion of the second block is located partially between the first and second interlocking portions of the first block when the second block is rotated 180 degrees in a horizontal plane with respect to the first block.

16. The column of concrete blocks of claim 15, further comprising a reinforcement member disposed vertically in the cores of the first and second blocks.

17. The column of concrete blocks of claim 15, further comprising a cap block disposed on the column of blocks.

18. The column of concrete blocks of claim 17, wherein the cap block comprises the shape of a four sided pyramid.

19. A method of stacking concrete blocks to form a column of concrete blocks, each block comprising a top surface; a bottom surface spaced apart from the top surface and defining a thickness of the block; a first, second, third and fourth side surface extending between the top surface and the bottom surface; an inner perimeter surface defining a core within the block, the core extending through the entire thickness of the block from the top surface through the bottom surface; first, second and third interlocking portions, each extending beyond one of the top surface or bottom surface of the block, the method comprising the steps of:

placing a first block;

stacking a second block on the first block by rotating the second block by one-half horizontal turn; and

interlocking the first and second blocks together by introducing the third interlocking portion of the first block at least partially into a space defined between the first and second interlocking portions of the second block.

20. The method of stacking of claim 19, further comprising the step of interlocking the first and second blocks together by partially capturing the third interlocking portion of the second block between first and second interlocking portions of the first block.

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